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THE CENTRAL ARCTIC

an area economic survey



Canada
INDUSTRIAL DIVISION

NORTHERN ADMINISTRATION BRANCH

DEPARTMENT OF INDIAN AFFAIRS AND NORTHERN DEVELOPMENT



PREFACE

This report is one of a series of Area Economic Surveys carried out by the Industrial Division of the Department of Indian Affairs and Northern Development.

The surveys are a continuing series of the government's efforts to determine the economic development problems in areas of the country which have been identified as being in need of attention.

THE CENTRAL ARCTIC

(1) Arctic Economic Survey
An Area Economic Survey

(2) Economic Survey
An Area Economic Survey

(3) Economic Survey
An Area Economic Survey

(4) Economic Survey
An Area Economic Survey

1968

A.E.S.R. #68/1

by

D. Villiers

The views, conclusions and recommendations expressed herein are those of the author and not necessarily those of the Department of Indian Affairs and Northern Development

Industrial Division
Department of Indian
Affairs and Northern
Development
Ottawa, August 1969

PREFACE

This report is one of a series of Area Economic Surveys carried out by the Industrial Division of the Department of Indian Affairs and Northern Development.

These surveys are a continuing part of the Department's efforts to determine the basis for local economic and social progress in the Northwest Territories. Basically the surveys are intended to:

- 1) Assess the renewable resources as to their ability to sustain the local population.
- 2) Determine the degree of exploitation of these resources and the efficiency of their use.
- 3) Investigate and explain the social and economic factors affecting resource utilization.
- 4) Recommend ways and means whereby the standard of living of the local people might be improved.

As the reasons for these surveys are practical, the material presented in the reports is selected for its relevance in this respect; much academic material gathered in the course of the investigation which may have been taken into account in the deliberations is necessarily excluded from these reports. On the other hand, authors have been given wide latitude in their approach and have been encouraged to give consideration to key problems of a theoretical nature and to include such theoretical argument where its inclusion is thought to contribute to the understanding of the material presented and of the practical conclusions drawn.

The reports are published primarily for use within the Department, for distribution to other interested government agencies and for limited distribution to libraries, universities, organizations and individuals actively engaged in northern research, administration or development.

The following reports in this series have been published to date or are in preparation:

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62/1	Southampton Island	D. Brack
62/2	Tuktoyaktuk-Cape Parry	G. Abrahamson
62/2	Western Ungava	R. Currie
63/1	The Copper Eskimos	G. Abrahamson
63/2	Keewatin Mainland	D. Brack and D. McIntosh
63/3	Yukon Territory Littoral	R. Currie
65/1	Banks Island	P. Usher
65/2	Northern Foxe Basin	G. Anders
66/1	The Mackenzie Delta	D. Bissett
66/2	Rae-Lac La Martre	G. Anders
66/3	Frobisher Bay	S. MacBain (Miss)
66/4	East Coast-Baffin Island	G. Anders, Ed.
67/1	Lancaster Sound	D. Bissett
67/2	South Coast Baffin Island	G. Higgins
67/3	South Shore-Great Slave Lake	D. Radojicic
67/4	Central Mackenzie	D. Villiers (Miss)
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ABBREVIATIONS USED IN THE TEXT

D.I.A.N.D.	Department of Indian Affairs and Northern Development
D.N.H.W.	Department of National Health and Welfare
D.O.T.	Department of Transport
G.S.C.	Geological Survey of Canada
R.C.M.P.	Royal Canadian Mounted Police
N.W.T.	Northwest Territories
C.A.P.	Canadian Arctic Producers
T.E.A.M.	Team Enterprises of Alberta and MacKenzie
G.S.L.R.	Great Slave Lake Railway
N.T.C.L.	Northern Transportation Company Ltd.
H.B.C.	Hudson's Bay Company
C.N.T.	Canadian National Telecommunications
P.W.A.	Pacific Western Airlines Ltd.
N.A.	Northward Aviation Ltd.

INTRODUCTION

The area economic survey of this portion of the Central Arctic represents an attempt to examine the present-day economies of the three Eskimo settlements at Spence Bay, Pelly Bay, and Gjoa Haven. These communities share similarities in regard to a number of factors.

In the last few years these northern settlements have become the focus of attention of both the Territorial and Federal Governments that has taken the form of increasing investments in community and economic development. One function of this survey is to study the implications of these and to offer suggestions for further development.

The region covered by this report extends from King William Island to Somerset Island, the Boothia Peninsula and mainland as far east as Pelly Bay on the Simpson Peninsula and lies between approximately longitudes 87° west, 100° west and latitudes 68° north, 74°. Spence Bay, Gjoa Haven, and Pelly Bay are the principal settlements. One camp, of approximately 10 families, is gathered at Tom Bay, and they are in the process of gradually moving into the larger settlement at Spence Bay. Three other families are scattered throughout the region. The most northerly of these camps is at Creswell Bay, another is at Brentford Bay and the third is in the vicinity of Mary Jones Bay.

Socio-economic problems that have developed in this area have arisen from a number of factors of which the most important have been the high rate of increase of the Eskimo population, and their rising dependence on a wage economy and the material comforts of an industrial society. The latter are becoming manifest by a tendency to remain in the larger groupings of the settlements for long periods of time, a decreasing use of faunal resources to satisfy needs, and an increasing demand for social services and wage labour.

The present state of the economies of these settlements is such that they cannot meet the demands of the Eskimos for wage labour, and are unlikely to be able to in the foreseeable future without relatively large and continuing investments from external sources. In terms of economic planning, other approaches to these problems will have to be considered that may ultimately be compromises between relocation, development and consolidation.

Programs for increasing the productivity of local economies must be combined with assistance in marketing systems. With educational programs to raise the levels of marketable skills the diffusion of residents into positions at present unavailable to them due to the lack of skills' and education, will to some extent solve the problem of increasing populations. During the transitional period of economic and social change, efforts should be made to encourage the out-migration of younger age groups and to provide support for them during the process of relocation.

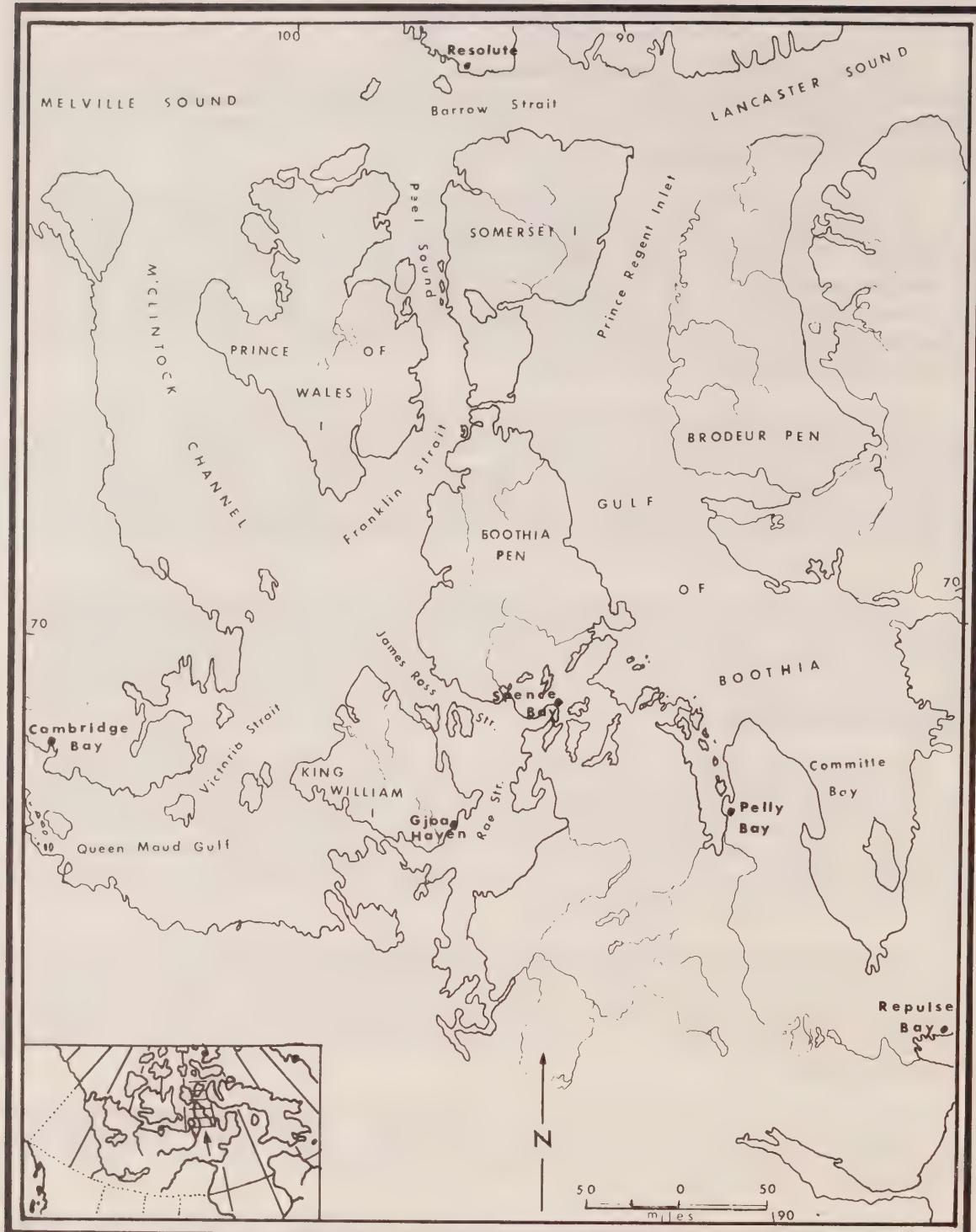
To be able to present data from various sources for a specific period of time it was necessary to select a period even though it did not coincide with the fiscal year of the Government or private agencies from whom data was elicited. For the purposes of this survey, the twelve-month period of January to December 1967 appeared to afford the most convenient period for which data was not only most readily available but the least out of date.

Field work for this survey lasted from May to early September 1968. During this time the settlements were repeatedly visited, and trips by dog-team and ski-doo were made. In August one long flight was undertaken to the outlying camps in the northern portion of the survey area.

Mr. Robert Coté, who acted as field assistant, contributed extensively to the data obtained for this report.

Library and file research was carried out to implement the data obtained during field work, and the report was completed in Ottawa during October through April 1969.

FIGURE 1
SURVEY AREA 1968



ACKNOWLEDGEMENTS

This report would have not been possible without the assistance and advice of a large number of people during both the period of field work and in the organization and writing of the report. I should like to extend my sincere thanks to all of them, and in order to do so I have listed the organizations with which they are associated.

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I am deeply indebted to Stella Van Rensberg, Nigel Wilford, Wilf Bean, and to Abe Okpik, Tom Charlton, Willie Laserich, Ernie Lyall, and their wives, not only for their unfailing assistance with this report, but for their many kindnesses and hospitality. The assistance of David Tucktoo, George and Walter Porter, Dolorosa Kakortangoark, John Ningak and his wife Celine Tuajok is gratefully acknowledged.

I should also like to thank the peoples of these settlements for having made the data collection process of field work such a pleasure.

A final word of thanks is due to the Ottawa based staff of the Department of Indian Affairs and Northern Development for their patience, advice and assistance during the compilation of this report.

CHAPTER 1

PHYSICAL ENVIRONMENT

Physiography and Geology

The Canadian Arctic region includes all the islands north of the mainland — generally referred to as the Canadian Arctic Archipelago — and the mainland coast from Point Barrow, Alaska, eastwards to Melville Peninsula and the northwestern shores of Hudson Bay. The region is roughly triangular in shape, covering over half a million square miles of approximately one third of the total area of Canada.

The land masses within this vast territory may be divided for convenience into three main groups:*

- (i) the eastern block—with sea approaches usually through Davis Strait or Hudson Strait;
- (ii) the western block—with sea approaches usually through Bering Strait and the Beaufort Sea, or from the Mackenzie River;
- (iii) the northern block—where penetration by sea is possible only in the east and south through Smith, Jones or Lancaster Sounds and some of their tributary channels.

The Eastern Block comprises the northwestern shores of Hudson Bay, Melville and Boothia peninsulas, and Baffin, Bylot, Southampton and Somerset Islands. The mainland section of the eastern block extends from the vicinity of Chesterfield Inlet north to Bellot Strait and northeast to Fury and Hecla Strait. It is, in the main, an area of rugged Precambrian rocks, vast stretches of which have been heavily glaciated during the last Ice Age. In many places the tortured folds of the original bedrock lie at the surface, their joints and fractures often forming the beds of lakes and rivers. Where these structural depressions reach the coast at the head of Committee Bay, they produce intricately indented shorelines along which the offshore ridges form a fringe of rocky islands and treacherous reefs. In other places a heavy mantle of glacial deposits covers the landscape and softens the contours of the rock beneath. Along the low shores of Roes Welcome Sound, between Cape Fullerton and Repulse Bay, this heavy cover of glacial drift has resulted in a smooth and regular coast and has ponded back the drainage into a waterlogged pattern of shallow lakes and meandering rivers. Muddy underwater flats extend a considerable distance offshore.

Boothia and Rae Isthmuses are low, lake-strewn, and dotted by knobby granitic hills. Both isthmuses have been glaciated and Boothia Isthmus in particular is heavily covered with glacial drift. North and south of these two narrow necks of land, the terrain rises to a rugged featureless plain between 1,000 and 2,000 feet above sea level, crossed in varying directions by rounded ridges all so alike as to afford few distinctive features in the monotonous landscape.

Boothia Peninsula, roughly 12,000 square miles in area, is formed by a broad tongue of Precambrian rock which extends north-northwest from the mainland and continues through the coastal areas of Somerset and Prince of Wales Islands to form the shores of Peel Sound as far north as Cape Granite and Browne Bay. In Boothia Peninsula it stretches as a rolling monotonous plateau, some 2,000 feet high along its central axis, and falls off northeast and southwest through an extremely rugged upland to disappear beneath a coastal lowland of more recent sedimentary strata. This Precambrian zone is highest and most rugged in the southeast, and most spectacular in the area of Murchison Promontory where it rises in sheer cliffs about 1,000 feet high and is characterized by long, narrow, steep-walled depressions which follow a northeast-southwest line of fracture. The greatest of these depressions is occupied by Bellot Strait, and several others fail to extend from coast to coast and form long finger inlets or partially filled narrow elongated lakes.

Bellot Strait separates Boothia Peninsula on the south from Somerset Island on the north. It varies in width from 900 to 2,000 yards and extends for approximately 15 miles from Prince Regent Inlet in the east to Franklin Strait in the west. The water throughout Bellot Strait is generally deep except for an extensive shoal area near the eastern entrance to the strait.

In the northeast of the Boothia Peninsula the sedimentary lowland areas extend roughly from the vicinity of Cape Palmerston to the southern shores of Brentford Bay, and in the southwest from the head of Josephine Bay to Weld Harbour. They are, on the whole, smooth and featureless, their relatively even coasts marked for a considerable distance inland by a broad series of raised beaches. For the most part the gradient is gentle and offshore waters shallow, but the land slopes up gradually towards the north to form low, flat-topped hills along the southern side of Brentford Bay.

To the west of the Boothia Peninsula the mainland coast marks the northern limits of the Precambrian Shield. It is formed of the more characteristic ancient crystalline rocks and its rolling, monotonous terrain is crossed by low ridges and scatterings of knobby hills about 500 or 600 feet high. Along the south shore of Queen Maud Gulf the coast is low and rocky, and much of it is overlain by recent marine sediments. The shallow offshore waters are dotted with rocks, shoals and islands. The west coast of Chantrey Inlet is low, with rock outcrops occurring amid the glacial deposits and with the hills of the interior plateau rising to 1,000 feet not far inland. The rocky east shore of the Inlet is comparatively regular throughout much of its length and, between the Hayes River and Cape Barclay, rises to heights of several hundred feet.

The Precambrian rocks of Adelaide Peninsula, and a considerable stretch of the coast between Chantrey Inlet and Spence Bay, are overlain by relatively smooth, flat-lying sedimentary rocks of more recent date, which have been covered in their turn by a heavy mantle of glacial drift. This drift cover has ponded back the drainage and given a waterlogged character to the area, and has produced along the coast, low rounded capes, shallow offshore waters, and the many low islands in Simpson Strait.

To the east of the Boothia Peninsula, the shores of the Simpson Peninsula are composed of stretches of smooth, lowlying sedimentary strata. Pelly Bay is entered between the northern extremity of the Harrison Islands group and a point to the southwest on Simpson Peninsula. The Bay is about 17 miles wide at the entrance and extends southward 65 miles with an average width of about 15 miles, except near its head, where it narrows to about 4 miles. From the southeastern entrance point of Pelly Bay the coast of Simpson Peninsula tends in a general southerly direction. The bulk of the peninsula is composed of lowlying Palaeozoic limestone. The western coastline is, in the main, low and flat rising to a height of 300 feet about three miles east of Logan Bay. Opposite Helen Island the coastal plain rises more steeply.

Committee Bay is entered between Cape Miles and Cape Chapman, it extends southward for a distance of about 135 miles to its head, which is separated from Repulse Bay to the south-southeastward by the 35 mile wide Rae Isthmus. The western shore of Committee Bay is formed by the eastern side of the Simpson Peninsula and the Canadian mainland southward of it, the eastern shore is formed by the west side of the Melville Peninsula.

The land on the western side of Committee Bay is low. About 5 to 10 miles inland from the southwestern side of the Bay the Ellice Hills rise to a height of about 500 feet. The eastern shore of the Bay is backed by the barren, rugged Prince Albert Hills which rise to heights of about 1,000 feet within a few miles of the sea, and extend along the whole of the west side of the Melville Peninsula.

Somerset Island is a little over 9,000 square miles in area and is divided into two contrasting regions along a line which runs southeast from Cape Granite, follows the eastern shore of Stanwell-Fletcher Lake and continues past the head of Creswell Bay to the head of Hazard Inlet.

To the east lies a vast plateau of level sedimentary strata similar to those on Brodeur Peninsula but at a lower general elevation of between 1,100 and 1,300 feet. It slopes down from the northeast corner of the island only to rise again along the extreme western edge to its highest recorded elevation of 1,600 feet a little north of the latitude of Howe Harbour. It is almost entirely devoid of lakes and its most outstanding surface feature is the dissecting network of deeply-incised river valleys. Bordering Prince Regent Inlet as far south as Creswell Bay, the cliffs rise sheer about 1,000 feet and the edge of the plateau forms a steep smooth coastline similar to opposite coasts on Brodeur Peninsula, and broken by only two major inlets: Elwin Bay and Batty Bay. Along Barrow Strait and along the north shore of Creswell Bay the land slopes

less steeply to the sea, with isolated bluffs or groups of rounded hills still maintaining the summit level of the plateau from which they have been carved by the erosion of wind and water. South of Creswell Bay elevations are lower and the land slopes gently towards Prince Regent Inlet, its surface ridged for a considerable distance inland by emergent strand-lines.

West of this sedimentary plateau lies a rugged upland of Precambrian rock generally over 1,000 feet high, a continuation of the Precambrian belt which extends northwestwards from the mainland to form the greater part of Boothia Peninsula. Between this upland zone and the plateau to the east lies a trough whose southern end is occupied by the island's major lakes but whose northern limits are poorly defined because the rising ground gradually merges with the higher land to the east and west.

The highest elevations in the Precambrian zone lie in the south and west where they rise to about 1,000 feet along the north shore of Bellot Strait and terminate in sheer cliffs comparable to those of Murchison Promontory across the channel. Long, narrow, structural depressions running northeast-southwest mark the southern limits of Somerset Island. The most important contains Bellot Strait, while the two main depressions to the north are occupied by Fitz Roy Inlet and False Strait and Macgregor Laird Lake.

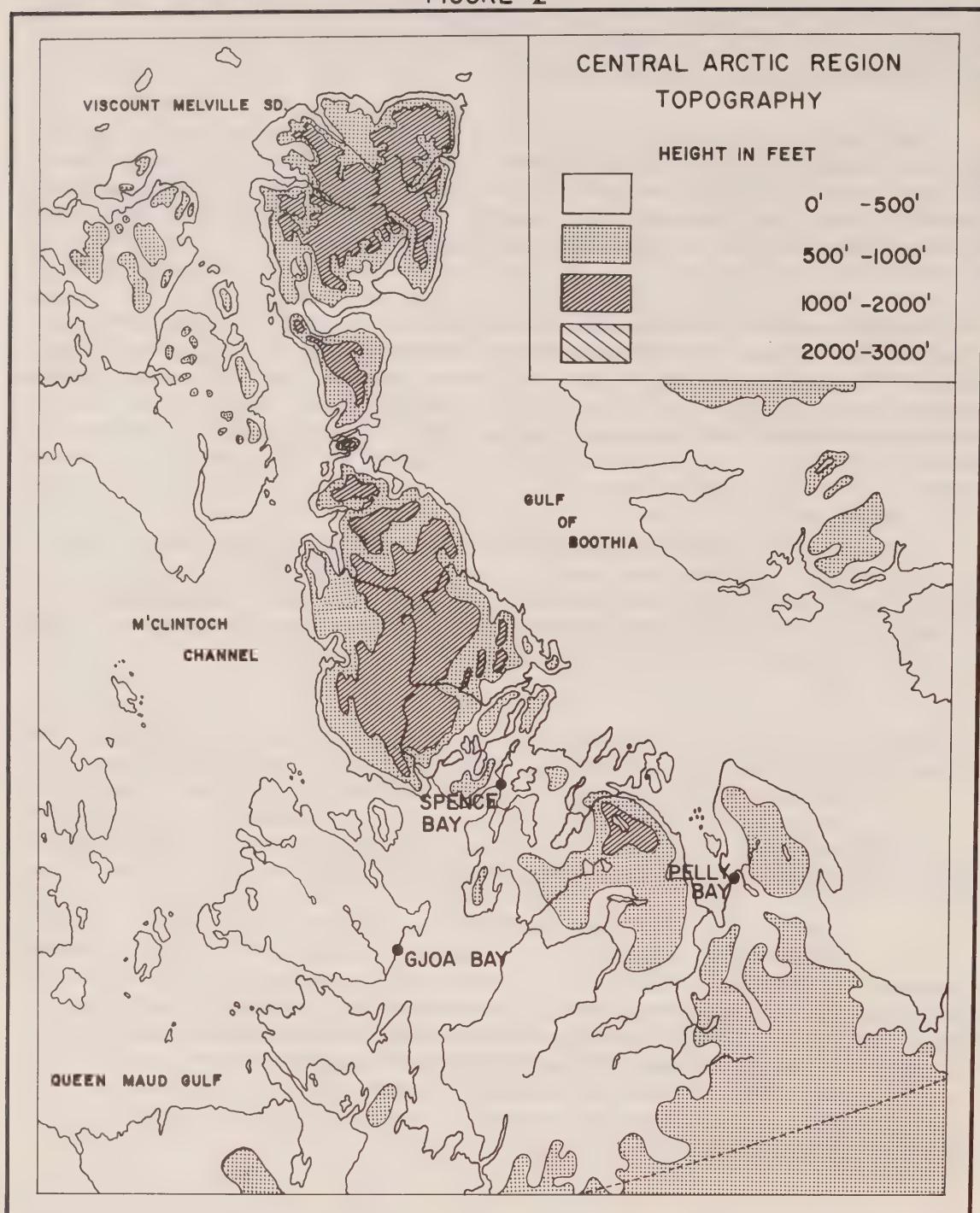
The west coast of Somerset Island, although fairly regular in general outline, is extremely rugged in detail, being indented by numerous tiny bays and fringed in many places by islands, including those lying offshore between Four Rivers Bay and Howe Harbour, as well as the De la Roquette Islands northwest of the entrance to Fitz Roy Island. A short distance inland, heights may exceed 1,000 feet, but the actual coastal elevations along this rugged shore are generally about 500 feet or less.

Victoria Island, with an area of approximately 82,000 square miles is the third largest island in the Canadian Archipelago, being slightly smaller than Ellesmere Island and roughly half the size of Baffin Island. It is divided into three main physiographic areas: a sedimentary plateau in the northwest similar to the northeast plateau of Banks Island, a vast lowland of drift-strewn sedimentary rocks occupying the eastern two-thirds of the island, and, in between, an upland zone of ancient, tilted, Precambrian sedimentary rocks similar to those of the scarp-land zone on the south shore of Coronation Gulf.

Prince of Wales Island has an area of about 12,800 square miles and lies midway between the eastern and western limits of the Canadian Archipelago. It is probably the most inaccessible and least visited of the larger islands south of Parry Channel and, to date, approach has only been possible from the east, by way of Lancaster Sound. As a rule the north shore can be reached during the summer, at least by icebreaker, and the east coast can usually be approached through Peel Sound. In some years, however, an ice barrier may form at the northern entrance of Peel Sound and approach to the east coast will then be made only by way of Prince Regent Inlet and Bellot Strait. The forbidding ice conditions in M'Clintock Channel and Victoria Strait prevent any approach from the west by sea.

The island is divided into main zones. In the north and east it forms part of the great level sedimentary plateau which includes Brodeur Peninsula and much of Somerset Island. In the west and southwest it is a continuation of the drift-strewn, waterlogged sedimentary lowland which stretches from the mainland through King William Island and eastern Victoria Island. The winding boundary between these two zones runs roughly southwest from the western end of Baring Channel across the isthmus connecting Cape Dundas and Cape Berkeley to the main part of the island, and from there along a line of low hills southwest to Drake Bay. It then follows the edge of the escarpment north of Drake and C. Smith bays, runs east from the head of C. Smith Bay to the head of Browne Bay and thence southeast to the vicinity of Coningham Bay.

FIGURE 2



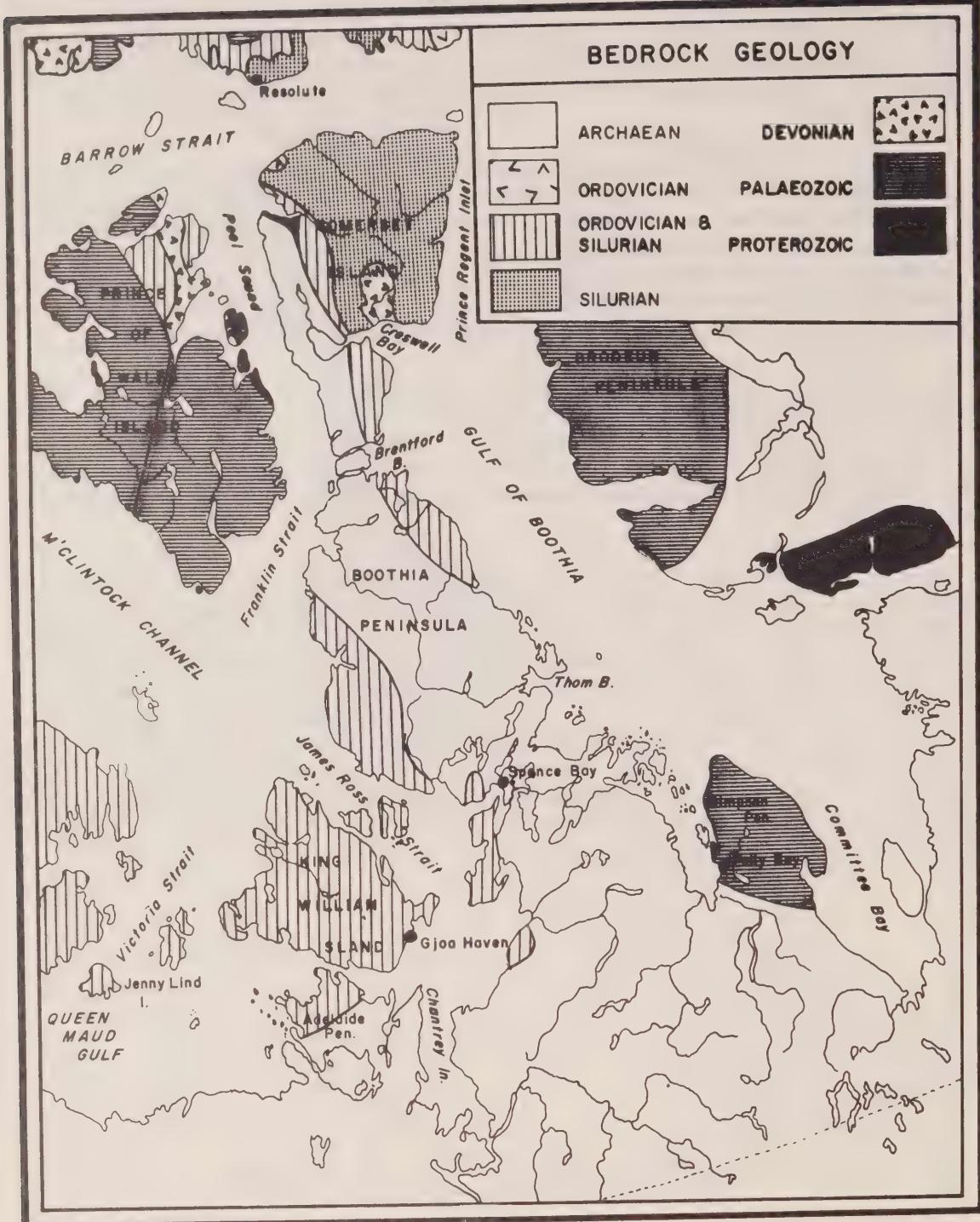
The highest part of the plateau lies in the northeast. Along the shore at Cape Walker on Russell Island and at Bellot Cliff the coast rises steeply to more than 800 feet, and a short distance inland, elevations are thought to be possibly even higher. The river valleys of the plateau are broader than the deeply incised streams of Somerset Island and Brodeur Peninsula; in fact, in the dissected area south of Browne Bay they become so broad and gentle that the widely separated remnants of the flat-topped plateau surface rise above them as mesas.

South and west of the plateau, the lowland extends flat to gently rolling, with broad stretches covered by glacial drift which in many places is oriented in the same directions as the neighbouring deposits on King William Island and the adjacent parts of the mainland. On Prince of Wales Island, however, this cover is not so thick, and stretches of exposed bedrock are not uncommon. The Colquhoun Range, which runs northwest for about 30 miles from the head of Guillemard Bay, appears to be composed of smooth, elongated mounds of glacial debris about 400 feet high. The coasts of the lowland zone are, on the whole, gently shelving, marked in many places by emergent strand-lines and shallow offshore waters.

On the east coast of the island, from Prescott Island to the vicinity of Transition Bay just south of Strzelecki Harbour, a narrow rugged strip of ancient crystalline rocks forms the western shore of Peel Sound. It is the northwestern edge of the broad tongue of Precambrian rocks which extends northwest from the mainland to form the greater part of Boothia Peninsula and the southwestern part of Somerset Island. On the western side of Peel Sound, it reaches its highest elevation of just less than 1,000 feet on Prescott Island.

King William Island has an area of barely 5,000 square miles. Like the southeastern section of Victoria Island it is formed by a low, level, monotonous, limestone plain, heavily overlain by glacial deposits and underlain by permanently frozen ground which dams back the drainage and gives a waterlogged landscape of rounded hills and numberless shallow lakes. In some places the glacial drift is orientated in the same direction as the deposits on the neighbouring sections of the mainland. Along the Humboldt Channel and James Ross Strait, and for a distance southwards from Cape Felix, the coast is formed by a series of low cliffs which slope up gently from the sea and are marked by parallel bandings of emergent strand-lines. Elsewhere, the low, island-fringed coasts are shelving and featureless, often difficult to distinguish in winter from the ice-covered straits surrounding them. Near its centre, the island reaches its highest elevation of about 300 feet. Its most outstanding landmark is Mount Matheson in the extreme southeast, rising to 240 feet.

FIGURE 3



SOILS

The majority of soils are youthful, shallow, and have failed to develop genetic horizons. Youthful characteristics of the soil are prolonged by the slight biochemical action, frost heaving, the brief annual unfrozen period, and the low precipitation that leads to restricted moisture transference even when drainage is possible. The permafrost table effectively blocks all underground drainage, and the slow thawing of the active layer, together with low evaporation, contributes to the damp condition that is typical of most Arctic soils.

In the high Arctic, where summers are shorter and cooler than elsewhere, regosols and lithosols lacking genetic horizons are usual. If mosses and lichens grow, a thin humus horizon may form. These soils are commonly neutral or alkaline, but occasionally they are more acid and develop a leached horizon.

Under the poorest drainage conditions, where there is no runoff and the permafrost table is close to the surface, there are bog soils, organic matter decomposes extremely slowly, and peat accumulates.

The organic layer may contain fresh material, but is often partly decomposed. Decomposition is extremely slow.

VÉGÉTATION

The Arctic is one of the world's harshest botanical environments and most northern plant species have been forced to adapt to survive. The growing season, at least in the Canadian Arctic, is short and may be interrupted by frosts at any time. Long hours of summer daylight partly compensate for the short growing season. Even so, few annuals exist and many plants depend on vegetative reproduction.

The Arctic deserts (including fell-fields) are the most barren of all the northern vegetation communities. Absence of vegetation is the main characteristic of these areas although sometimes this is more apparent than real. Arctic deserts dominate high Arctic areas, but become progressively more restricted farther south. In the middle and southern Arctic they are found on the uplands, where altitude and wind are major factors in their development, on the bare rock lowlands that are common in some parts of the Canadian Shield, and on the sedimentary plains. The most extensive species in the Arctic deserts are crustaceous lichens that often darken the rock with their black and brown colours. Vascular plants occur as isolated individual species, frequently growing as tussocks. The most common plants are the mountain avens (*Dryas integrifolia*), locoweed (*Oxytropis arctica*), purple saxifrage (*Saxifraga oppositifolia*), and arctic poppy (*Papaver radicatum*). For a short period in early summer there are usually sufficient flowers for broad areas to be richly coloured. Many other species may be present in sheltered areas. Although large sections of arctic tundra may be enclosed in the rock deserts, the general lack of vegetation leaves the soils essentially unprotected from the geomorphic processes.

The remaining four plant associations are forms of tundra in which there is a continuous, or a virtually continuous, vegetation cover. Under the driest, subarid conditions, a rather poor, thin, lichen-moss tundra develops. It is found in many upland environments including elevated strand-lines, old river terraces, sandy tills, and on tills with a high boulder content and coarse matrix. The characteristic species of this community are the lichens, particularly reindeer moss (*Cladonia* sp.) and in some areas Iceland moss (*Cetraria islandica*). In environments where precipitation is high, notably in Canada, in northern Quebec, lichen forms a dense, continuous mat. Interwoven with the lichens are the sedges, grasses, arctic willow (*Salix arctica*), and avens (*Dryas* sp.). Lichen-moss tundra is found in the middle Arctic, but is rare in the far north.

The settlements in the study area are located north of the tree-line in an area of progressively decreasing vegetation. Mats of lichen-moss and stunted vascular plants can be found throughout the region and are interwoven in a mosaic with large areas of bare rock and sandy till.

FIGURE 4

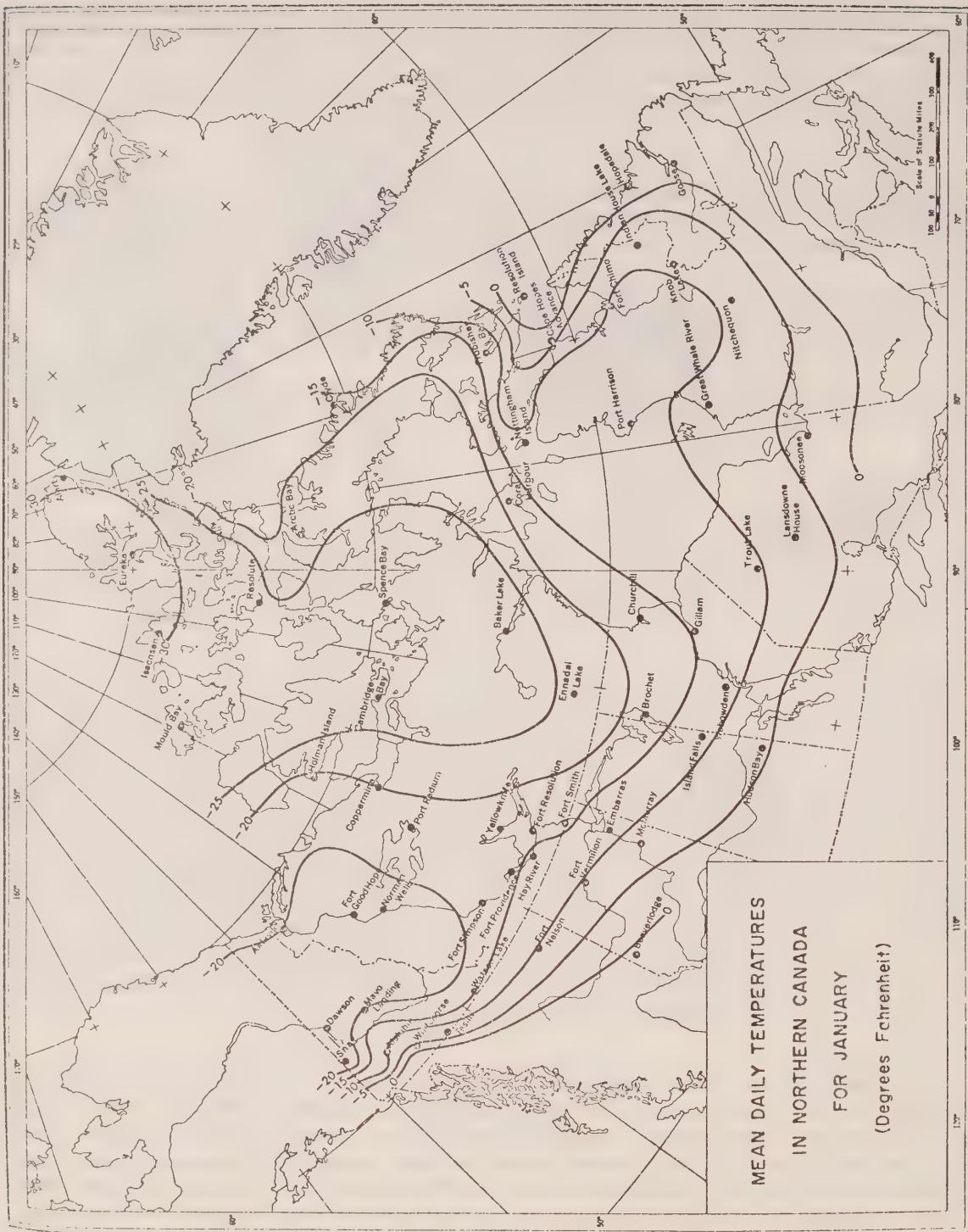
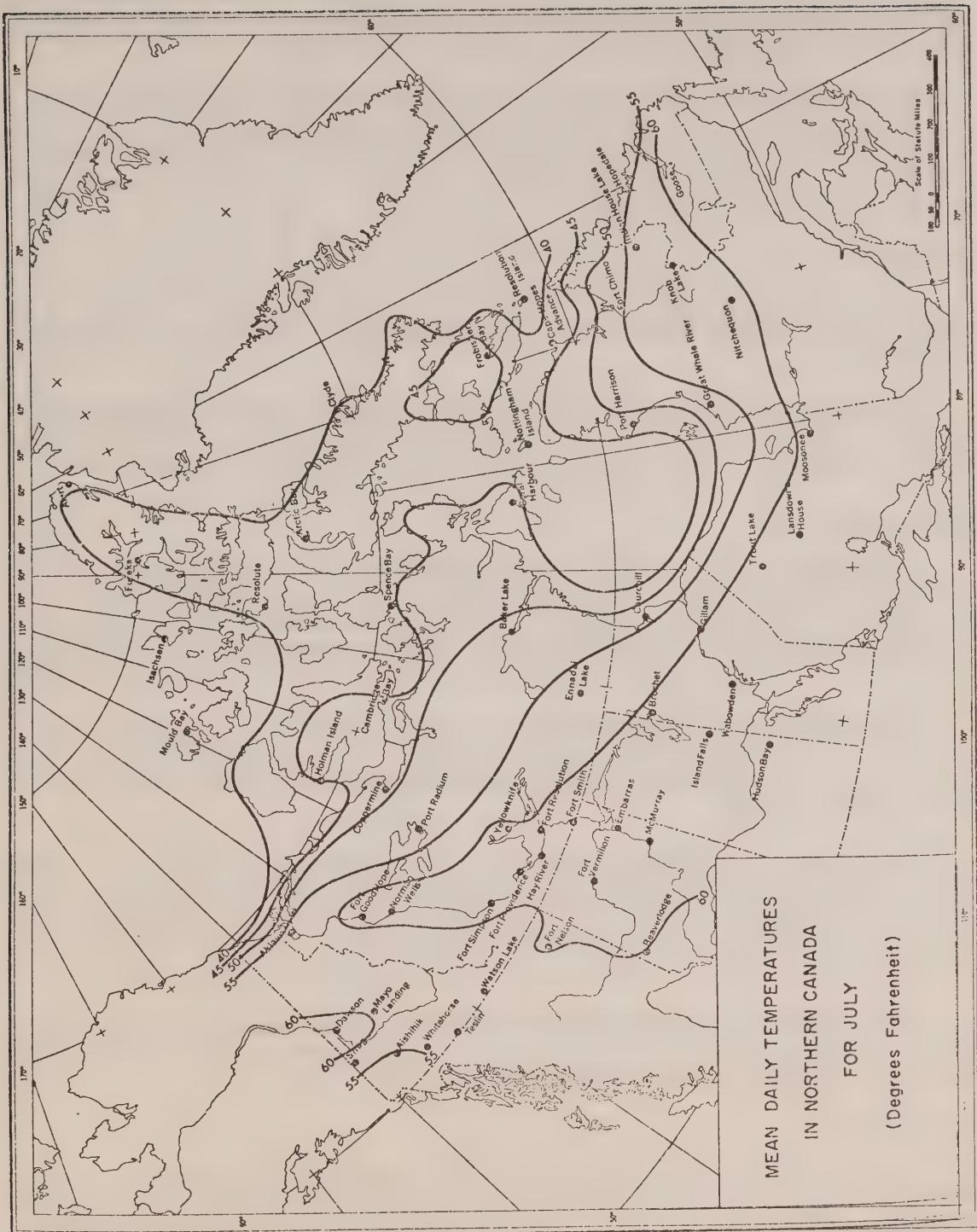


FIGURE 5



PERMAFROST

The three settlements in the study area are located in the area of continuous permafrost. Where drainage is poor, areas of groundwater accumulate with the melting of snow, and overland travel routes and settlement sites are affected to the extent that these areas have to be avoided.

Building in permafrost areas presents problems resulting in increased building costs and limitations on the type of buildings that can be constructed. In these three settlements none of the permanent buildings has a basement, and most of them have been built so as to be elevated some distance off the ground. At Pelly Bay the most recently constructed Eskimo houses were built on a gravel-pad base to ensure against thawing of the ground beneath the building.

CLIMATE

In the Arctic, weather reporting stations are widely separated from each other. Records of the weather stations at Cambridge Bay and Arctic Bay would be pertinent to an appraisal of the climate of the area between them.

For the greater part of the year this area is subject to a continental-type climate. During the period of "open water" maritime influences have a moderating effect that is greater along coastlines, and over the smaller islands, than in the interiors of such large land areas as Victoria Island, or on the Arctic mainland.

THE SEASONS

The phenomena differentiating the seasons, as experienced in more southern latitudes, are either absent or so diminished in intensity in the Arctic Archipelago as to be almost inapplicable to this area. The two most clearly defined seasons are winter and summer with brief transitional periods between them. While eastern sections of the Arctic, in particular, may be subjected to substantial variations in temperature from year to year, large, rapid temperature fluctuations during a particular month or season are uncommon.

Winter is characterized by temperatures that are consistently below freezing. In general, the ground is snow covered and the hours of sunlight diminish rapidly after the middle of September. Fast-ice forms and extends several miles seaward. During this season of continuous ice-cover in the seas and channels, the Arctic is relatively cloud-free.

Summer is that period during which temperatures are generally above freezing and snow is absent except on protected slopes and in gullies. Fast-ice has disappeared and travel by boat is possible. Hours of daylight have steadily increased until by May most sections of the Arctic have no sunset. Evaporation from the exposed water areas and saturated ground surfaces supply additional moisture to the air and permits formation of extensive low-lying cloud layers. Fog is also a feature of summer coastal conditions.

The two seasons are separated by periods of break-up and freeze-up that last for approximately three to five weeks. During these times ice conditions are in a transitional stage and travel by conventional means is virtually impossible unless land-based landing strips have been built.

TEMPERATURE

While there is little difference between the daily mean temperatures given in Tables 1 and 2 for the weather stations at Arctic Bay and Cambridge Bay, it would appear that the higher average temperatures recorded at the more northerly station at Arctic Bay reflect the moderating maritime influences of Lancaster Sound and Baffin Bay.

In general, temperatures in this area average below zero for all months December through April, and temperatures as low as -60° F have been recorded during the coldest months.

Summers are brief and cool with the highest temperatures recorded as 75° F.

TABLE 1
AVERAGES AND EXTREMES OF CLIMATIC DATA

STATION Arctic Bay

LAT $73^{\circ} 00'N$ LONG $85^{\circ} 18'W$

ALTITUDE ABOVE M.S.L. 36 Ft.

	AIR TEMPERATURE						PERCENTAGE FREQUENCY OF DAYS WITH MINIMUM TEMPERATURES AT or BELOW			Mean Cloud Amount 10ths of Sky Covered
	Mean Daily °F	Maximum °F	Minimum °F	Mean of Daily	Mean of Monthly	Highest Recorded °F	Lowest Recorded °F			
January	-21.9	-15.0	-28.7	11	-43	40	-52			3.8
February	-25.2	-18.2	-32.1	9	-46	36	-57			4.1
March	-19.7	-11.4	-27.9	12	-43	34	-49			4.0
April	-2.2	7.1	-11.4	27	-29	36	-37			4.6
May	18.6	26.1	11.0	38	-8	51	-15			6.3
June	36.1	41.8	30.3	54	18	63	11			6.4
July	42.4	49.5	35.3	62	30	75	22			6.2
August	40.7	46.4	35.0	56	28	65	24			7.0
September	29.8	33.8	25.7	45	13	56	5			7.6
October	11.8	17.0	6.5	32	-14	44	-26			7.1
November	-9.2	-3.0	-15.4	18	-29	36	-42			4.4
December	-18.8	-12.1	-25.5	8	-40	34	-50			3.4
Year	6.9	13.5	0.2	63	-49	75	-57			5.4
Period	1951 - 1960				1937 - 1960			1951 - 1960		

	PRECIPITATION						WIND		Mean Days with	DEGREE DAYS		
	RAIN		SNOW		TOTAL (WATER)	MOST PREVALENT	Direction	Percentage		Fog-Visibility less than 5/8 mile	Blowing Snow-Visibility 6 miles or less	
	Mean Amount In.	Days No.	Mean Amount In.	Days No.								
January	T	*	2.4	7	0.24	0.20	nnw	24	3.4	*	a	
February	0	0	2.0	7	0.20	0.18	nnw	27	2.8	1	6	
March	0	0	2.1	6	0.21	0.29	nnw	24	3.6	1	3	
April	0	0	1.6	4	0.16	0.32	nnw	26	3.5	1	3	
May	T	*	2.9	8	0.29	0.22	nw	27	6.0	2	1	
June	0.23	2	1.6	3	0.39	1.03	nw	32	8.2	1	0	
July	0.78	8	0.1	*	0.79	0.62	nw	39	8.8	3	0	
August	0.70	7	0.2	1	0.72	0.54	nw	38	7.6	1	0	
September	0.38	3	5.1	7	0.89	0.94	nw	26	8.1	1	1	
October	T	*	6.0	11	0.60	0.73	wnw	35	6.2	*	1	
November	0	0	2.4	7	0.24	0.15	wnw	31	6.1	*	2	
December	0	0	1.8	5	0.18	0.12	nw	26	3.4	0	2	
Year	2.09	20	28.2	66	4.91	1.03			11	28	20933	
Period	1951 - 1960								9854	828	1937-60	
	1950 - 1959								1950 - 1959	828		

* Average less than 0.5

a Period 1955 - 1960

TABLE 2

AVERAGES AND EXTREMES OF CLIMATIC DATA

STATION Cambridge Bay

LAT $69^{\circ} 07'N$ LONG $105^{\circ} 01'W$

ALTITUDE ABOVE M.S.L. 47 Ft.

	AIR TEMPERATURE								PERCENTAGE FREQUENCY OF DAYS WITH MINIMUM TEMPERATURES AT or BELOW						Mean Cloud Amount 10ths of Sky Covered
	Mean Daily		Mean of Daily		Mean of Monthly				Highest Recorded		Lowest Recorded				
	°F	°F	°F	°F	°F	°F	°F	°F	°F	°F	°F	°F	°F	°F	°F
January	-27.4	-20.8	-33.9	3	-48	21	-63	99	92	70	32	2	4.2		
February	-31.4	-26.5	-36.3	-6	-50	11	-59	99	98	83	43	7	3.7		
March	-23.9	-17.1	-30.6	7	-45	21	-52	97	85	85	19	1	3.8		
April	-6.2	2.0	-14.4	22	-34	43	-42	66	38	13	2	0	4.8		
May	15.2	21.7	8.7	35	-11	45	-31	11	0	0	0	0	6.9		
June	34.9	40.0	29.8	56	17	72	6	0	0	0	0	0	7.5		
July	46.2	53.4	39.0	68	33	75	30	0	0	0	0	0	6.6		
August	44.8	50.6	38.9	63	31	76	26	0	0	0	0	0	7.1		
September	32.0	35.8	28.1	50	14	60	7	0	0	0	0	0	8.2		
October	11.8	17.6	5.9	33	-14	39	-25	15	1	0	0	0	7.3		
November	-12.0	-5.7	-18.3	16	-32	27	-44	81	50	9	0	0	5.0		
December	-22.2	-16.1	-28.3	3	-43	18	-57	95	85	52	15	0	4.4		
Year	5.2	11.2	-0.9	69	-52	76	-63						5.8		
Period				1951 - 1960				1935 - 1960				1951 - 1960			

	PRECIPITATION								WIND				Mean days with	DEGREE DAYS	
	RAIN		SNOW		TOTAL (WATER)		MOST PREVALENT		Average Speed m.p.h.		Fog-Visibility less than 5/8 mile		Blowing Snow-Visibility 6 miles or less		
	In.	No.	In.	No.	In.	In.	Direction	Percentage					Below 65° F	Below 32° F	Above 32° F
January	0	0	2.8	8	0.28	0.22	W	27	12.3	2	15	2846	1870	0	
February	0	0	1.7	6	0.17	0.22	W	28	10.7	2	8	2684	1800	0	
March	0	0	2.2	7	0.22	0.23	W	19	10.6	2	8	2675	1698	0	
April	T	*	1.8	6	0.18	0.18	N,NW	16	12.3	2	7	2157	1150	0	
May	0.02	1	2.4	6	0.26	0.26	NW	21	12.7	7	3	1541	543	2	
June	0.41	3	2.6	4	0.67	0.61	N	20	12.9	4	2	897	54	115	
July	0.80	7	0.1	*	0.81	0.80	N	20	12.9	2	0	561	0	432	
August	0.93	7	T	*	0.93	0.97	E	16	12.8	5	0	642	2	387	
September	0.32	5	2.9	6	0.61	0.41	E,NW	20	13.4	4	2	999	82	92	
October	0.03	1	4.2	10	0.45	0.37	NW	23	14.0	3	6	1652	653	1	
November	T	*	3.3	9	0.33	0.17	W	22	12.0	2	6	2277	1318	0	
December	O	O	2.4	8	0.24	0.16	W	25	10.8	1	10	2697	1705	0	
Year	2.51	24	26.4	60	5.15	0.97			12.3	36	67	21628	10875	1029	
Period					1951 - 1960								1935-60	1950 - 1959	

* Average less than 0.5

a Period 1955 - 1960

PRECIPITATION

The total precipitation for the two stations also differs little. June usually marks the start of a completely changed weather regime which continues until cold, wintery conditions return to the region in September. May is a month of increased cloudiness and snowfall over most of the area, due in part to more numerous open-water leads in Hudson Bay and in some eastern Arctic sounds, and to the arrival of moist air from southern Canada.

Snow may fall during any month of the year in the Archipelego whereas rain is limited to the relatively short summer period.

The water content of the total annual precipitation at these two stations is 4.9 inches for Arctic Bay and 5.15 inches for Cambridge Bay. In temperate latitudes, annual precipitation of this magnitude is found only in desert regions.

Heavy falls of rain are unusual in this region, most of it falls in the form of a light drizzle with occasional heavier showers.

From December to April, precipitation over the Arctic Archipelago is entirely in the form of snow. During the winter, snow does not present a serious restriction to visibility as the crystals are usually so small and the rate of fall so light that visibility is seldom reduced to less than 2 to 3 miles. But due to the fact that winter snowflakes are small and dry, the wind can readily pick up the particles from the surface and wind speeds of 15 miles and over create conditions of blowing snow that may extend no more than a few hundred feet above the ground but reduce visibility considerably. The forecasting of the occurrence of blowing snow is largely a matter of forecasting the strength of the wind.

The relatively higher water content of snow during May and September, and the increased frequency of snowfalls during these periods, produce conditions of reduced visibility that are a hazard to travel.

WIND

The typical winter pressure distribution over North America consists of a trough of low pressure over Davis Strait and Baffin Bay and a ridge of high pressure along the Mackenzie Valley. Thus the undisturbed airflow pattern would result in northwesterly winds over Baffin Island, and northeasterly winds over Ellesmere Island and generally north to northwest winds over the central and western parts of the Archipelago. The observational data for these two stations fits this general picture fairly well.

Wind speeds for both weather stations are low, but Cambridge Bay appears to have fewer calm days than Arctic Bay. This might result from the fact that the latter is surrounded by high hills. In the coastal region separating these two stations, however, there is likely to be considerable variation in wind direction and velocity due to topographic change. Winds, tides and currents exert a great influence on the movement of ice in the area that is of particular significance to the shipping lanes during the summer.

CLOUD AND FOG

Cloud cover increases with open water conditions and the months from May to September are the period of greatest cloudiness for the area. This period is also one of increasing coastal fogs.

At Resolute, during the spring and summer, it has been noted that the base of stratus cloud is frequently less than 1,000 feet with a vertical development of 2,000 feet or less. As temperatures in these clouds approach the freezing point severe icing conditions may be encountered by aircraft flying through them. When freeze-up occurs the supply of moisture is decreased abruptly and cloudiness over the area shows a marked decrease which continues throughout the winter.

During the winter, when the ice is broken up by tide action or winds, leads of open water occur. The slight amount of moisture that is added to the air is sufficient to saturate it and fog is formed. This type of fog is commonly known as steam fog or Arctic sea smoke. Fog is frequent during the period of break-up when the ground is comparatively wet from melting snow, and occurs chiefly during the hours when the sun is low.

Coastal fogs are prevalent during the summer and persist until freeze-up. Fogs of this type are reported to go no more than 15-20 miles inland. During the period of field work, a pilot's report of weather conditions for the three settlements in the study area indicated that extensive summer cloud and fog were marked features of the area.

Ice fogs occur infrequently during the winter due to the lack of moisture in the very cold air. However, during the coldest months they may occur in small patches in the vicinity of settlements, where sufficient moisture may be added to the air through fuel combustion in the heating of houses.

DEGREE-DAYS

Perhaps one of the most important considerations of climate in this area, as it is throughout the North in general, is the increased cost of heating and the more expensive building methods and materials needed to combat the cold.

Heating is considered necessary below 65°F, and heating degree-days can be calculated by multiplying the number of days with a mean daily temperature below 65°F by the total number of degrees below 65°F. The following tabulation gives the number of degree-days in various locations, and is some indication of the increase in heating requirements in this area.

Location	Fuel Consumption Degree-days
Toronto	7,008
Vancouver	5,390
Edmonton	10,320
Winnipeg	10,770
Montreal	8,130
Yellowknife	15,600
Norman Wells	16,132
Cambridge Bay	21,628
Arctic Bay	20,933

Since cumulative degree-day values give an indication not only of the severity of the climate but the duration of the cold weather as well, they may also be used to compare temperature regimes of the Arctic and southern Canada. The Arctic stations have twice the heating degree-day at Edmonton and Winnipeg and four times the number of heating degree-days at Vancouver. It can be seen from the climatological data for Cambridge Bay and Arctic Bay, that at these stations, there is no month in the year when heating is unnecessary.

TIDES AND CURRENTS

Western Arctic Waters

For the greater part of the Canadian Western Arctic, only a limited amount of information is available concerning the set and drift of the prevailing currents. In Amundsen Gulf the circulation may be considered anti-clockwise, inasmuch as an easterly-setting surface current moves along the coast of the mainland, and, whilst one branch of this current enters Dolphin and Union Strait, another branch curves northward along the west coast of Victoria Island and northeastward along the eastern side of Prince of Wales Strait. A south-setting coastal current enters Amundsen Gulf from the western side of Prince of Wales Strait, eventually moving westward towards Cape Kellett.

A weak easterly drift prevails from Dolphin and Union Strait through Coronation Gulf and Queen Maud Gulf, and a south-setting current moves through M'Clintock Channel and Victoria Strait, entering the northeastern part of Queen Maud Gulf.

In Peel Sound there appears to be a general setting of the ice to the south, but this is probably due to wind and is not constant.

ICE CONDITIONS

In this area, freshwater-ice conditions are probably of less importance to the people of the area than are those relating to the sea ice. Fast-ice and the frozen lake and river systems provide the major surfaces for travel during the greater part of the year. But as the bulk of stores and equipment are brought into the settlements at Gjoa Haven and Spence Bay by boat and barge down the Mackenzie River, the importance of safe shipping lanes through the coastal waters from Tuktoyaktuk can readily be appreciated.

Sea Ice

The freeze-up and break-up tabulation given below gives some indication of the periods of development and deterioration of fast-ice, but are of little use in determining the safe periods for shipping.

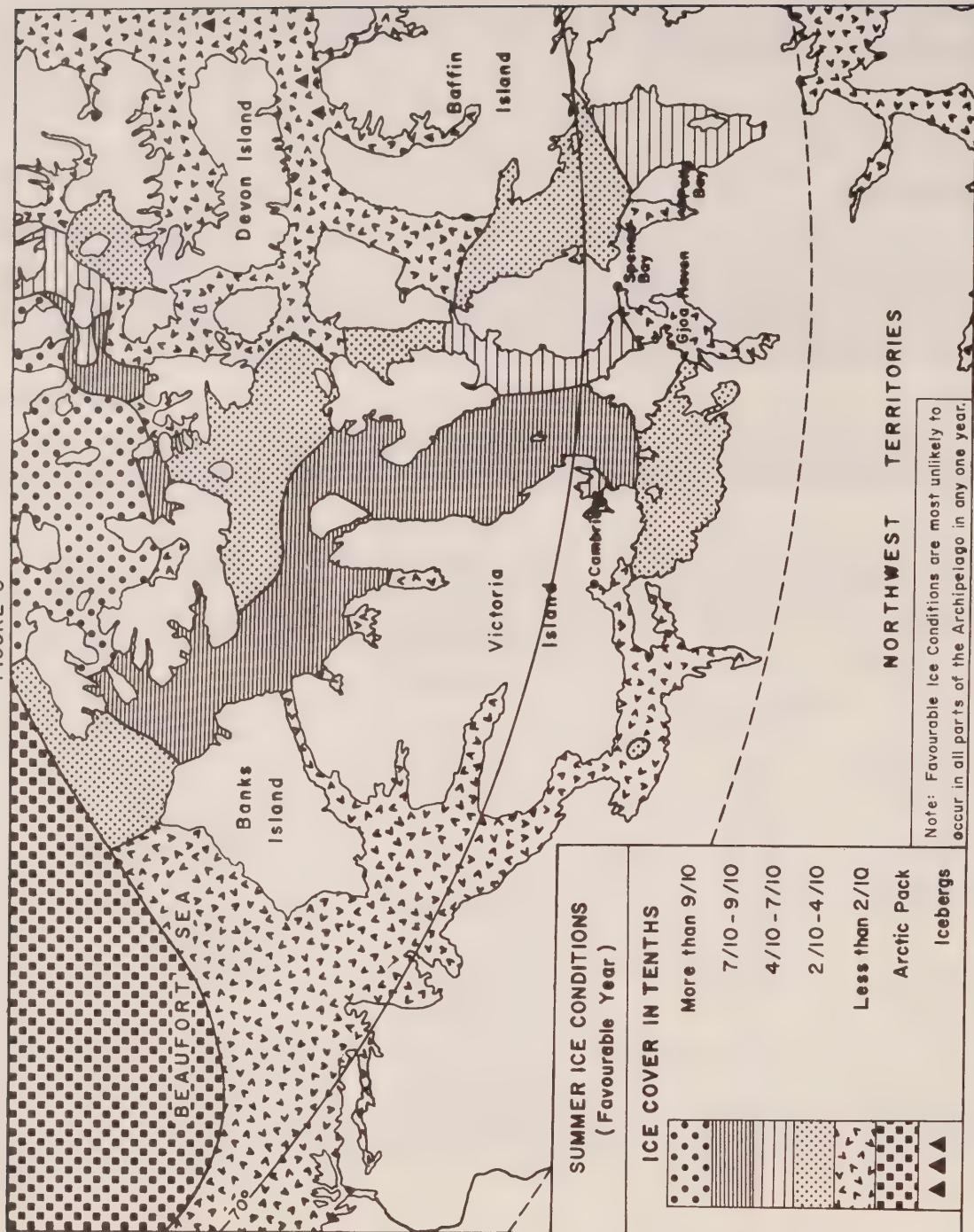
Location	Year	Freeze-up	Year	Break-up
Arctic Bay	1961	October 13	1962	May 28
Cambridge Bay		October 6		June 28
Spence Bay		September 28		April 13
Arctic Bay	1962	October 19	1963	May 24
Cambridge Bay		September 17		June 28
Spence Bay		September 27		June 4
Arctic Bay	1963	October 4	1964	July 17
Cambridge Bay		October 7		July 16
Spence Bay		September 24		June
Arctic Bay	1964	October 6	1965	June 28
Cambridge Bay		October 12		June 25
Spence Bay		October 9		May 28
Arctic Bay	1965	October 8	1966	May 21
Cambridge Bay		October 2		June 17
Spence Bay		September 26		June 17

Source: D.O.T.

Ice conditions in Queen Maud Gulf determine the length of the shipping season to these settlements, and in general the ice conditions in this gulf are the worst to be encountered at any point along the mainland passage.

Ice begins to form in the latter part of September and the coastal areas are solidly frozen by the end of the month. In October the concentration in the gulf increases to between 5/10 and 8/10 in the central portion, and by December the area is solidly covered with rough ice. At the end of May some leads and cracks may develop, and in July patches of open water may be expected. Inlets and bays around the islands may become ice-free during July but the south shore of the gulf is almost solid throughout the month. In mild seasons, navigation in Queen Maud Gulf is possible during the first two weeks of August, but the most

FIGURE 6



Source : Arctic Pilot of Canada

ice-free period is usually from this time until mid-September. In bad years navigation may be difficult throughout the entire summer, and strong winds with northerly or southerly components may pack the drifting ice firmly against the lee shores.

Simpson Strait appears to remain frozen throughout most of June with a rapid loosening in July. Patches of open water may then appear although ice often remains close packed along the heavily indented shores of Adelaide Peninsula until August. The date and amount of clearance in the strait depends on the strength and direction of the wind but the channel may be navigable about mid-August although the first two weeks of September usually give the best conditions.

M'Clintock Channel and the northern part of Victoria Strait are never open. In some years there is a general loosening of the ice, with a fair degree of puddling, and with the development of cracks and narrow shore leads, which permit the ice-cover to move gradually southwards, more or less as a unit.

In severe ice years, the ice in the entire area from the entrance of Peel Sound and M'Clintock Channel southwards to James Ross Strait and the northern limits of Queen Maud Gulf may remain unbroken throughout the summer.

As late as 1957, Committee Bay had not been penetrated by ship, and ice conditions in the bay are such that there is no definable open season of navigation. Arial reconnaissance has shown a limited amount of open water in July and August in parts of the bay, but the natives report it to be heavily encumbered by ice floes throughout the summer season.

Supplies and stores for Pelly Bay reach the settlement by air lift from Churchill or Yellowknife. Some are transported by barge to Spence Bay and re-routed from there by aircraft. Pelly Bay is not serviced by the Arctic maritime transportation systems.

In the summer of 1966, the supply ship was not able to reach Spence Bay until the third week in September, and newly forming ice had to be broken before it could enter the harbour. In 1967, ice conditions were more favourable and the ship came in two weeks earlier.

Fort Ross, situated on the southeast coast of Somerset Island, was abandoned by the Hudson's Bay Company in 1948 due to the inability of their supply ship to reach the post for two consecutive years.

Freshwater Ice

The lake and river systems in the area are, to some extent, used by the Eskimos for the purposes of travel, and their ice conditions are of importance in determining travel habits. These freshwater bodies freeze more rapidly than those having some measure of salinity, and the freshwater ice deteriorates more quickly than sea ice, particularly along shore lines. Rivers are the first to be ice-free, and although considerable melting occurs in lakes, a large segment of ice often remains until late in August.

About the last week in May, lake and river ice has begun to deteriorate and by July the rivers are usually ice-free. By the end of September ice has begun to re-form on the lakes, and by the end of October both lakes and rivers have frozen to a sufficient depth to permit travel.

Chapter 2

COMMUNICATIONS AND TRANSPORTATION SYSTEMS

COMMUNICATIONS

Radio-Telephone

Spence Bay was the only settlement with an intra-community telephone system linking the residences and offices of the various agencies. This system was installed in the winter of 1967. Communication between settlements or with other centres is by means of radio-telephone.

The radio-telephone network in this area is made up of four circuits: the Catholic missions, the Hudson's Bay Company stores, the R.C.M.P. detachments, and the C.N.T. installations. The first three of these circuits are not for the use of the public but can be used for the transmission of emergency messages if the Canadian National Telecommunication equipment fails.

Routing of the C.N.T. system is through the main station at Cambridge Bay. Under conditions of poor radio reception any station may pick up a transmission and act as a transmitting agent between the two parties calling.

The types of circuits operating in each settlement are shown below.

TABLE 3

Radio-Telephone Services

Location	Order of Frequency	Call Sign	Power	Hours of Service	Licensee
Cambridge Bay	157	Kc/s	VFC 3	2 kw	D.O.T.
	2-13	Mc/s		300 watts	
	2-5	Mc/s	CHB 548	400 "	C.N.T.
	3-4	Mc/s	CJS 274	50 "	not specified
	4-5	Mc/s	XLJ 445	25 "	
	4-7	Mc/s	XJA22	25 "	24
	5	Mc/s	VXV46	40 "	
	4-5	Mc/s	CJN89	25 "	
Spence Bay				"	Giant Yellowknife Mines Ltd.
	2-5	Mc/s	CHB567	100 "	not specified
Spence Bay	3	Mc/s	CJS281	70 "	
				"	Les Oblats de Marie Immaculée
Spence Bay	4-7	Mc/s	XJE74	25 watts	not Specified
	4	Mc/s	XKB43	20 "	
Gjoa Haven	2-5	Mc/s	CHB559	100 watts	C.N.T.
	3	Mc/s	CJS276	50 "	
	4	Mc/s	XKA88	25 "	Hudson's Bay Company
				100 "	
Pelly Bay	2-5	Mc/s	CHB558	100 watts	not Specified
	3	Mc/s	CJN906	50 "	

Source: D.O.T.

The radio set at Tom Bay is battery-operated. It is housed in the Catholic mission and is the responsibility of the local Lay Dispenser. The machine is used by the Lay Dispenser to contact the nurse at Spence Bay in the event of emergencies or for obtaining instructions regarding treatment for patients. The Department of National Health and Welfare pays the rental cost of this equipment, and fresh batteries are obtained from Spence Bay when required.

At Pelly Bay the D.I.A.N.D. pays for the rental of the radio set that is housed in the school and operated by the teacher. This set is also primarily used for community messages, and for communicating with the nurse at Spence Bay. In the event of malfunctioning of this set the mission circuit can be used to contact Spence Bay.

The H.B.C., at Gjoa Haven also operates the public telephone system, but with the small population of whites in this community the circuit is rarely used and is more in the nature of a standby service in the event of mechanical failure of the other sets.

Spence Bay has four radio-telephone sets, and the C.N.T. employs a part-time radio operator to maintain contact with the station at Cambridge Bay at scheduled hours. Emergency calls can be made to Cambridge Bay at any time, but normally traffic is confined to the hours when the local operator is in attendance.

TABLE 4
Rates For Outgoing Calls

Route	Person/ Person (3 minutes)	Each Additional Minute	Station/ Station (3 minutes)	Each Additional Minute	Time Effective (hrs.)
Ottawa & Toronto – Cambridge Bay	\$9.30	\$1.80	\$5.50	\$1.80	0600- 1800
& Montreal	\$7.45	\$1.30	\$3.95	\$1.30	1800- 0600
Edmonton – Cambridge Bay	\$4.65	\$1.00	\$3.10	\$1.00	0600- 1800
	\$3.50	\$.75	\$2.30	\$.75	1800- 0600

Postal Services

It was not until February of 1967, that a scheduled air service to the settlements at Spence Bay and Gjoa Haven was started. Prior to this date, movement of freight and passengers to and from the settlements had been by charter of aircraft from Cambridge Bay. Due to the irregularity and unpredictability of these flights, mail to the settlement was subject to delays in delivery and collection.

With the establishment of a scheduled air service, a contract for the carriage of mail was made between the postal authorities and Northward Aviation Ltd. This contract requires the carrier to complete one delivery of mail a week during the flying seasons. At present, there is a regular weekly delivery and collection of mail to each of the above settlements, and the service is implemented whenever the plane returns to a settlement during the week.

As yet, there are no scheduled air service to either Tom Bay or Pelly Bay, mail for these two communities is transported to Spence Bay and held there until there is a charter flight to one of them.

Postal rates to these settlements are high when compared with rates in the south, but in relation to other northern settlements the rates compare favourably. First-class mail goes at the same rates as that in the south, and parcel-post rates are the most affected. The following gives a comparison of present parcel-post rates to these and other northern centers.

Spence Bay	
Gjoa Haven	45¢ per lb. up to a maximum of 25 lbs
Pelly Bay	
Fort Norman	
Fort Good Hope	65¢ per lb. up to a maximum of 25 lbs
Norman Wells	
Fort McPherson	
Arctic Red River	80¢ per lb. up to a maximum of 25 lbs
Inuvik	

Printed matter to all these settlements costs 5 cents for the first two ounces, and 3 cents for each additional two ounces, up to one pound; after this parcel post rates apply.

TRANSPORTATION

Spence Bay and Gjoa Haven are the only two communities in the study area that are served by both air and water-borne transportation. Cambridge Bay is the centre from which air services radiate out to the other settlements.

Transportation costs to these settlements are high, and are a function of a number of factors. The most important of these are the influences exerted by climate, distance, volume of traffic, and the existence of alternative means of cheap transportation.

In Terms of the movement of freight, the costs of marine transporation are substantially less than those of air freight, but the shipping season is a short one, and the stores and equipment that do not meet the deadline for delivery at the point of loading have to be re-routed and moved by air, or wait until the shipping season of the following year.

Due to the low economic activity of small and scattered populations, the volume of freight to the settlements is low, and the negligible amount of southbound freight does not provide a sufficient backhaul to allow a reduction of freight rates.

The absence of an all-weather road or rail system to provide an alternative means of cheap transportation is another factor that prevents a reduction of freight rates.

Bissett (1967) and Wolforth (1967) have provided extensive discussions on the various forms of transportation in the Western Arctic that are pertinent to the transportation costs as they apply to the present survey.

Air Transportation

Air transportation has become of increasing importance to the movement of freight and passengers to and from these northern settlements, but air operations in the area are severely handicapped by adverse weather or landing conditions. Landing strips have been built at Gjoa Haven and Spence Bay, and another was in the process of completion at Pelly Bay during the summer of the survey. These landing strips are used mainly during the periods of break-up and freeze-up when ice conditions are unreliable or of insufficient depth to support an aircraft.

During the winter, planes are equipped with either skis or wheels and landing strips are cleared on the ice. When there is sufficient open water along shorelines or in lakes near a settlement, aircraft skis are replaced by floats and these smaller aircraft land in close proximity to the settlement.

Pacific Western Airlines Ltd., flies a weekly service by DC-6 from Edmonton to Cambridge Bay with a stop-over at Yellowknife. Traffic to Cambridge Bay and the settlements of the Arctic Islands and coast, serviced out of Cambridge Bay, has to be routed through Edmonton or Yellowknife.

The P.W.A. flight to Cambridge Bay leaves Edmonton on Sunday morning, and as connecting services to the other settlements do not occur until later in the week passengers must find accommodation in Cambridge Bay.

As stated previously, the scheduled weekly air service to Gjoa Haven and Spence Bay was not put into operation until February of 1968. Prior to this date an aircraft had to be chartered to move equipment stores or personnel to or from a settlement. This resulted in inter-settlement travel delays, and was the most expensive means of transportation. It also resulted in passengers who wished to share a charter having to wait in Cambridge Bay until arrangements for this could be completed, and in passengers at the settlements having to contend with periods of uncertainty regarding their departure.

At present, the feeder services to the settlements serviced by an aircraft based at Cambridge Bay is operated by Northward Aviation Ltd. The weekly flight to the settlements is by Otter aircraft that leaves Cambridge Bay for Spence Bay every Monday. Unless this plane is chartered at Spence Bay for flights to Tom Bay or Pelly Bay it returns to Cambridge Bay the same day by way of Gjoa Haven.

The settlements in the study area are also reached by chartered aircraft flying out of Inuvik, Yellowknife, or Churchill. These routes are rarely used due to the costs involved. From the spring of 1965, Hercules or DC-4 aircraft have been used by the various agencies in the settlements to bring in stores and equipment. The Eskimo houses constructed at Pelly Bay were flown in by the air lift of 1967.

TABLE 5
Air Transportation, 1968

	Source	Destination	Distance (air miles)	Cost (dollars)
Passenger (single)	Edmonton	Cambridge Bay	1100	121
	Cambridge Bay	Spence Bay	314	100
	Cambridge Bay	Gjoa Haven	238	90
	Spence Bay	Gjoa Haven	87	35
Air Freight (per cwt)	Edmonton	Cambridge Bay	1100	39
	Cambridge Bay	Edmonton	1100	21
	Cambridge Bay	Spence Bay	314	35
	Cambridge Bay	Gjoa Haven	238	32
	Spence Bay	Gjoa Haven	87	18
Charter**	Cambridge Bay	Spence Bay	314	564
	Cambridge Bay	Gjoa Haven	238	428
	Spence Bay	Tom Bay	52	94
	Spence Bay	Pelly Bay	116	208

*P.W.A. charges 51 cents per lb for amounts under 100 lb for northbound and 27 cents for southbound freight.

**Personal communication from P.W.A. These rates apply to Otter aircraft chartered at the rate of 90 cents per mile.

The following tables giving the movement of air traffic indicate that while the traffic to the area has increased over the years, the directional imbalance discussed by Bissett and Wolforth remains. The peak periods for passengers on northbound flights appear to be from May to September, and is due in part to the influx of exploration teams, scientific personnel of various disciplines and probably an increased number of government personnel. The high point reached in August, in all likelihood, represents the return of teachers to the northern settlements. The increase of southbound traffic from July to October is due to the departure of the teachers, personnel going on holiday, and the return to the south of the transient summer population. Wolforth has given a more detailed analysis of the seasonal/directional flow of traffic in the Western Arctic.

TABLE 6

Air Traffic Movement, 1967

Northbound Ex Edmonton to Yellowknife & Cambridge Bay					Southbound Ex Cambridge Bay to Yellowknife & Edmonton				
Month	Passengers	Mail	Express	Freight	Passengers	Mail	Express	Freight	
	No.	lbs.	lbs.	lbs.	No.	lbs.	lbs.	lbs.	
January	40	2,996	661	28,433	31	422	159	9,490	
February	23	1,944	741	14,025	19	191	13	16,465	
March	31	1,887	775	16,201	27	232	—	6,799	
April	21	2,404	348	17,791	24	379	33	4,376	
May	60	3,164	795	25,250	33	297	21	4,978	
June	67	2,389	555	30,633	27	353	14	3,732	
July	65	1,765	638	44,723	61	309	15	6,609	
August	117	2,590	2,170	58,630	84	427	—	10,642	
September	68	2,261	1,105	58,844	80	206	6	41,285	
October	42	3,328	817	38,068	66	535	4	3,481	
November	56	3,441	1,777	41,060	40	380	46	6,036	
December	33	4,311	1,040	28,307	35	593	27	6,753	

TABLE 7

Totals of Freight and Passenger Flow, 1963-1967

Northbound – Ex Edmonton					Southbound – Ex Cambridge Bay			
Year	Passengers	Mail	Express	Freight	Passengers	Mail	Express	Freight
	No.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
1963	226	21,076	2959	162,014	203	1143	140	30,855
1964	247	12,271	3389	219,172	229	1587	405	49,029
1965	297	16,557	6036	229,023	278	2301	127	71,477
1966	401	19,909	11,485	295,434	404	3534	98	54,956
1967	623	32,480	11,422	401,965	527	4324	338	120,646

Source: P.W.A.

In addition to the freight transported on the regular weekly flights, P.W.A. flew special charter air lifts using DC 4 and Hercules aircraft. The figures in Table 7 give the amount of freight carried and the number of flights made during the years 1965-68.

Figure 7

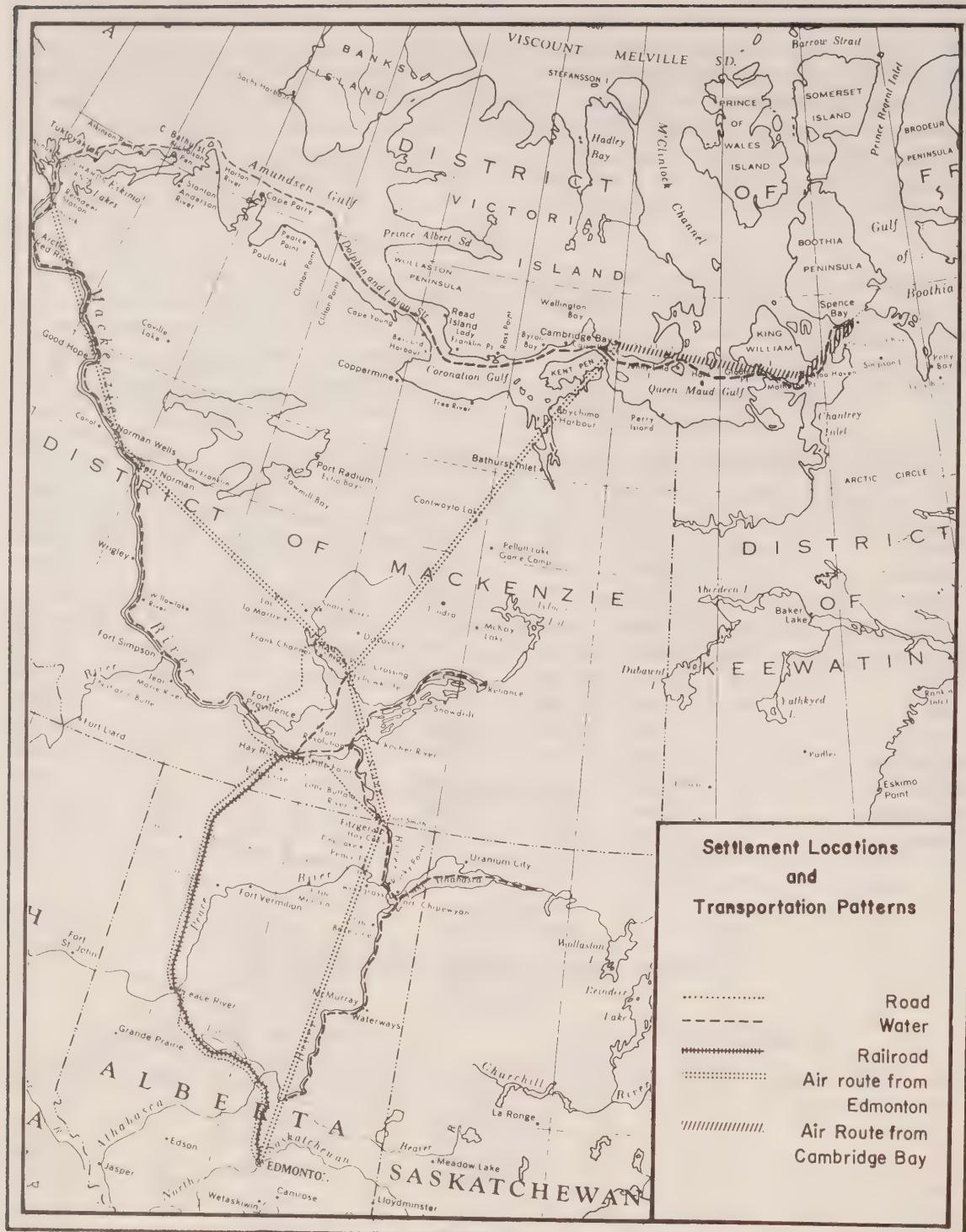


TABLE 8

Air-Lift Flights

Source	Destination	1965		1966		1967		1968	
		No. of flights	Total freight lbs.	No. of flights	Total freight lbs.	No. of flights	Total freight lbs.	No. of flights	Total freight lbs.
Yellowknife	Cambridge Bay	4	70,579	12	221,066	3	128,582	1	18,310
	Coppermine	15	266,692	15	270,704	38	1,632,695	19	349,434
	Holman Island	28	484,239	5	90,556	1	43,048	3	52,905
	Gjoa Haven	1	10,149	7	126,921	—	—	—	—
	Spence Bay	6	83,796	5	89,874	1	39,700	4	65,328
	Pelly Bay	—	—	3	46,901	1	—	1	16,500
Churchill	Pelly Bay	—	—	—	—	11	458,044	—	—

Source: P.W.A.

As none of the settlements has a runway long enough to accommodate these larger aircraft, landing areas have to be prepared on the sea ice, and these flights are made during March and April when the ice has reached its maximum thickness.

To some extent Table 8 indicates the yearly changes that have occurred in regard to developmental projects in these settlements.

During 1967 a total of 118 charter flights were made to the settlements and camps in the survey area. Ten of these were to one or more of the outlying camps to return and pick up school children or for medical purposes. There were 54 flights chartered to Pelly Bay and 19 to Tom Bay by either the D.I.A.N.D. or N.H.S. These flights were also for the evacuation of patients, movement of freight and personnel, or to return and pick up school children.

Of the 118 charter flights, seven were shared by the D.I.A.N.D. or N.H.S. with other agencies. The total expenditures of the two departments on air transportation in this area amounted to approximately \$97,000 for 1967.

Road, Rail, and Water Transportation

Freight to the northern settlements, if shipped by other than air transportation, can be routed from Edmonton to Waterways by rail and transhipped to N.T.C.L. barges for movement north. The alternative, and more frequently used route, is for freight to be trucked from Edmonton to Hay River and then reloaded onto barges. The latter is the shorter water route, but the reduction in distance is compensated for by the trucking rates between Edmonton and Hay River. This is illustrated in Table 9.

TABLE 9
Road, Rail, and Water Transportation Costs, 1968

Source - Destination	Method of Transportation	Distance (miles)	Cost (dollars)
1.			
Edmonton — Waterways	rail	305	49
Waterways — Cambridge Bay	barge & ship	2475	136
Waterways — Spence Bay	barge & ship	2825	168
Waterways — Gjoa Haven	barge & ship	2732	164
2.			
Edmonton — Hay River	rail	706	50
Hay River — Cambridge Bay	barge & ship	1907	117
Hay River — Spence Bay	barge & ship	2257	149
Hay River — Gjoa Haven	barge & ship	2164	144
3.			
Edmonton — Hay River	truck	707	70

Freight rates are affected not only by the distances involved, the alternative systems of transportation available, and the amount of freight shipped in both directions, but by the additional handling required in the process of re-routing. Freight to the settlements in the study area has to be trans-shipped at either Hay River or Waterways and then again at Tuktoyaktuk and the cost of this is reflected in the freight rates.

Table 10 gives the total tonnage shipped to the settlements and indicates that the largest proportion of the freight is oil products which originate at Norman Wells. The rise in the oil and petroleum shipments reflects the increase in the number of houses being built at each settlement. (Table 10).

The backhaul of freight from the settlements was primarily in the form of empty oil drums to Norman Wells and the personal effects of people leaving the settlements.

Roads

Road construction in the northern settlements is estimated by D.I.A.N.D. to cost between \$15,000 and \$25,000 a mile, and unsurfaced roads approximately \$2,000 a mile. In the three settlements road construction has been minimal.

The sandy beach area on which the settlement at Gjoa Haven has developed provides a dry, fairly firm surface for motor vehicles and other traffic, and no road system exists in the settlement.

At Pelly Bay, approximately one mile of unsurfaced road has been built from the air-strip to, and around, the recently developed residential area. The surface of the road, although in need of further grading and resurfacing, is usable by vehicular and pedestrian traffic.

Of the three settlements, Spence Bay has the least serviceable road system. Within the settlement there is an ungraded road running for approximately a mile through the centre of the community. It is dissected by two small watercourses and passes through the low-lying clearing along the lake shore between the dock and warehouse. From here the road rises gradually in the vicinity of the nursing station and terminates near the H.B.C. complex at Canso Lake. Beyond the settlement, this "thoroughfare" continues in a westerly direction for about 5 miles and leads to the landing strip. This portion of the road has developed from usage, and new routes have to be used as ground becomes too broken up and waterlogged.

In the boulder-strewn, sharply rising, terrain in which the settlement has been located, all the Eskimo houses, the nursing station, the two missions, and the school are inaccessible from the road. The vehicles used for water, fuel delivery, and garbage disposal go as far as is possible over the rough landscape, and provide what services they can to the houses within reach. Fuel, water, and garbage must be hauled by hand to and from those houses that are inaccessible by vehicle.

TABLE 10

**Tonnage of Freight Shipped by Northern Transportation Co. Ltd.,
1965-67**

Source	Destination and Tonnage								
	Gjoa Haven			Spence Bay			Cambridge Bay		
	1965	1966	1967	1965	1966	1967	1965	1966	1967
Northbound — Waterways	66	1.5	—	165.9	2.8	2.7	134.4	76.3	12.4
Hay River	54.7	77	54.8	197.3	253.6	251.7	154.2	382.6	911.1
Norman Wells	168.9	244.4	473	482.8	419	601.6	2152.4	2093.4	2165.7
Fort Smith	.9	.6	3.3	1.8	.9	5.3	5.7	1.2	12.6
Cambridge Bay	42.7	11.7	76.4	34.3	36.9	49.7	—	—	—
<hr/>									
Source	Waterways			Hay River			Norman Wells		
	1965	1966	1967	1965	1966	1967	1965	1966	1967
Southbound — Gjoa Haven	.3	—	—	—	.5	.7	31.4	26.7	44.8
Spence Bay	.3	—	—	—	4.4	30.7	51.8	16.8	3.6
Cambridge Bay	78	5.1	—	—	52.0	30	169.5	132.4	10.3
<hr/>									
Cambridge Bay							Fort Smith		
	1965	1966	1967	1965	1966	1967	1965	1966	1967
Cambridge Bay							1.4	—	—

Other Types of Transportation

The traditional forms of transportation used by the Eskimo have been the kayak, umiak, and dog-team. Over the years these have gradually been replaced by water craft and land vehicles that have been manufactured elsewhere and imported into the area. Until recently, travel by aircraft has been on a charter basis, and the costs have been beyond the means of the Eskimo.

At present, the dog-team is the only survivor of the former means of transportation, and these are decreasing in usage as the ski-doo type vehicle gains in popularity. Canoes, Peterheads, whale-boats, and trap-boats have replaced the kayak, and umiak.

Canoes

The freighter canoe, with a "U" or "V" stern, is the type used in the area. Sizes of these canoes range from 18 — 22 feet, and the outboard motors used on them are from 10 — 20 hp. When extra fuel is required on a journey it is transported in either a number of spare gas tanks or in 5-or 10-gallon drums.

Prices of canoes vary between the settlements. A 20-foot canoe costs between \$700 and \$800. The price of a 10 hp motor ranges from \$400 to \$460. Gasoline varies in price from \$1.50 a gallon at Gjoa Haven and Spence Bay to \$2 a gallon at Pelly Bay. Oil averages at around \$1 a quart.

During the summer, canoes are primarily used to tend nets, for hunting seals or, particularly in the Spence Bay area, for travel to and from the settlements.

Peterheads, Whale-boats, and Trap-boats

These vessels vary in size and cargo capacity. They are anywhere from 22 to 45 feet long with a cargo capacity of 2 to 15 tons depending on length and beam.

The Peterheads are decked and partitioned into storage areas and living quarters. Whale-boats and trap-boats are normally open, but most have some form of decking added and an enclosure built to protect the helmsman against the weather. The smaller boats are equipped with two 3-cycle gasoline operated engines and are capable of an average speed of 4.6 knots. The larger boats are powered by more powerful diesel or gasoline engines and are capable of faster speeds.

These inboard powered boats are also used for fishing and hunting, but the distances travelled in them are usually longer. Most of the boats are over five years old, and some are considerably older. With poor maintenance and rough usage they are all in a poor state of repair.

The present cost of a new trap-boat or whale-boat ranges from \$2,000 to \$3,000, and \$5,000 to \$6,000 for a Peterhead.

Tracked Vehicles

The variety and size of the tractor-type vehicle found in the settlements is to some extent dependent on the amount of construction taking place.

In the past, the larger tracked vehicles have not been extensively used in this area to transport material and supplies. Due to the inaccessibility of Pelly Bay to marine transportation, supplies have been taken to Repulse Bay by sea-lift, and then overland by dog-team to Pelly Bay, a distance of nearly 200 miles. The facilities of West Simpson DEWline station have also been utilized, and supplies have been hauled the 12 miles from West Simpson by both dog-team and tractor train. More recently, surplus machinery and building from nearby DEWline stations have also been moved overland by tractor during the winter to both Gjoa Haven and Pelly Bay.

During the summer of the survey, the permanent equipment of Spence Bay included one crawler tractor which, with an attachable farm-type trailer, was used on utility services. There were two D8 tractors (one of which had been driven across from Pelly Bay) working on preparing an unloading area for the ship and clearing areas for the new houses that were to be built. On completion of these projects the tractors were to be used to build a new airstrip, and then return to Pelly Bay to extend the airstrip there.

The other tracked vehicles found in the settlements were the Bombardier Snowmobile, the Nodwell and the ski-doo type vehicle. The snowmobile is used on a year-round basis for transportation of passengers and freight within the settlement or to the airstrip. Due to distances between settlements, and the poor mechanical condition of these vehicles at Pelly Bay and Spence Bay, they are seldom used for long distance overland travel. The two machines at Gjoa Haven had, during the winter, been used to haul fish from Chantrey Inlet.

The Nodwell is another vehicle used all year. One of these machines is at Gjoa Haven and another at Pelly Bay, where they are fitted with either a farm-type trailer or stone-boat and used to perform the utility services and movement of freight.

The smallest of the tracked vehicles are of similar design to the ski-doo. These vehicles have only been used in the settlements for the last two – three years and demands for them have steadily mounted each year. At Pelly Bay alone, the number of ski-doos in the community had increased from eight vehicles in the summer of 1967, to 14 in the following summer.

During the winter, the ski-doo is being increasingly used by the Eskimos for hunting and to visit nets. When travelling long distances it is usual to tow a komatik loaded with food, gasoline, and equipment. The weight loaded on to a komatik varies from a few hundred pounds to half a ton or more. As tow-bars are not

used, the strain on the part of the vehicle to which a komatik is attached is not frequently the cause of mechanical breakdown. On long journeys it is usual for two or more ski-doo groups to travel together. In the Arctic environment the need for this is obvious.

The advantages of the ski-doo over the dog-team are the speed of travel, and the larger load that can be towed on a komatik. These two factors can, in time, radically change the present patterns of trapping. Two of the changes that can occur are now in the process of developing. The first is that permanently employed males are using their ski-doos for weekend hunting trips and for tending their traps. The use of ski-doos for this purpose can, in time, have the effect of increasing the present radius of intensive trapping that surrounds a settlement. The other change is occurring as people in the camps at, and around, Tom Bay are making more frequent trips to Spence Bay to trade and visit.

The economics of maintaining a dog-team as opposed to a ski-doo were becoming apparent to an increasing number of Eskimos, particularly as the people in permanent employment were providing a practical demonstration of being able to combine hunting and trapping with a permanent job. This latter group realized that not only were they able to travel faster and further by ski-doo, but that they were able to do it more frequently without incurring a loss in wages, due to requiring the additional time previously needed for prolonged hunting trips.

CHAPTER 3

NATURAL RESOURCES

INTRODUCTION

For the purpose of discussion the natural resources of the area will be divided into the groupings of renewable and non-renewable resources.

When considering the renewable resources of the area the Arctic ecosystem must be borne in mind. Few plants in the area are important sources of food to the Eskimo population, and the principal function of both terrestrial and marine plants is to provide food for the herbivorous animals. The Arctic ecosystem supports a variety of herbivore, carnivore, and marine life.

In the past, the seasonal distribution and abundance of the fauna were fundamental to the survival of Eskimo groups. With the development of a trading economy, the trapping and exchange of furs gradually increased in importance over the quest for food alone. Another factor affecting the relationship of the Eskimo to faunal resources has been the introduction of government regulations in regard to utilization and exploitation of fauna. The introduction of wage labour and government allowances has also affected the relationship of the local population to faunal resources.

Territorial and Federal Government involvement in the protection and preservation of fauna was initiated in the early part of this century and with it the concept of conservation has been introduced to the Eskimo. Orders in Council and Regulations of the Northwest Territories, and Acts of the Federal Government affecting the harvesting of fauna are based on two premises. The rights of the Eskimo to hunt and trap in order to sustain himself and his family and the need to protect and preserve faunal resources at an optimum ecological level.

Legislation and restrictions in regard to harvesting and utilization of faunal resources have affected the relationship of the Eskimo to these resources in two ways. To assure the optimum usage of animals killed, the hunter has been made responsible for ensuring there is a minimal amount of wastage of edible viscera. The other has occurred where legislation regarding exploitation has had to be introduced to preserve a species. As the work of the Canadian Wildlife Service and the Fisheries Research Board furthers the understanding of the ecosystem of the Arctic, it is inevitable that the resource harvesting patterns of the Eskimo will continue to be affected.

For the purposes of this report only the renewable resources of importance to the Eskimo will be dealt with. These will be treated under the headings of distribution, harvesting, utilization, and exploitation.

PART I

NON-RENEWABLE RESOURCES – DISTRIBUTION AND UTILIZATION

The history of exploration in this area starts in 1818 when Sir John Ross first entered Lancaster Sound. He was followed by other explorers searching for the Northwest Passage, and later by scientific explorations and search expeditions which followed the disappearance of Sir John Franklin's two-ship expedition. Up to 1852 numerous observations on the geology of the parts explored were gathered by the explorers. After that date further geological information was limited until the summer of 1954, when a private expedition under the leadership of Wilbur E. Dow of New York City visited northern Prince of Wales Island to make geophysical observations in the vicinity of the North Magnetic Pole. The following year Operation Franklin was undertaken by the Geological Survey of Canada to perform studies of stratigraphy and structural geology. The results of this work was to provide the basic framework for the assessment of mineral resources and has led to more detailed investigations of specific areas.

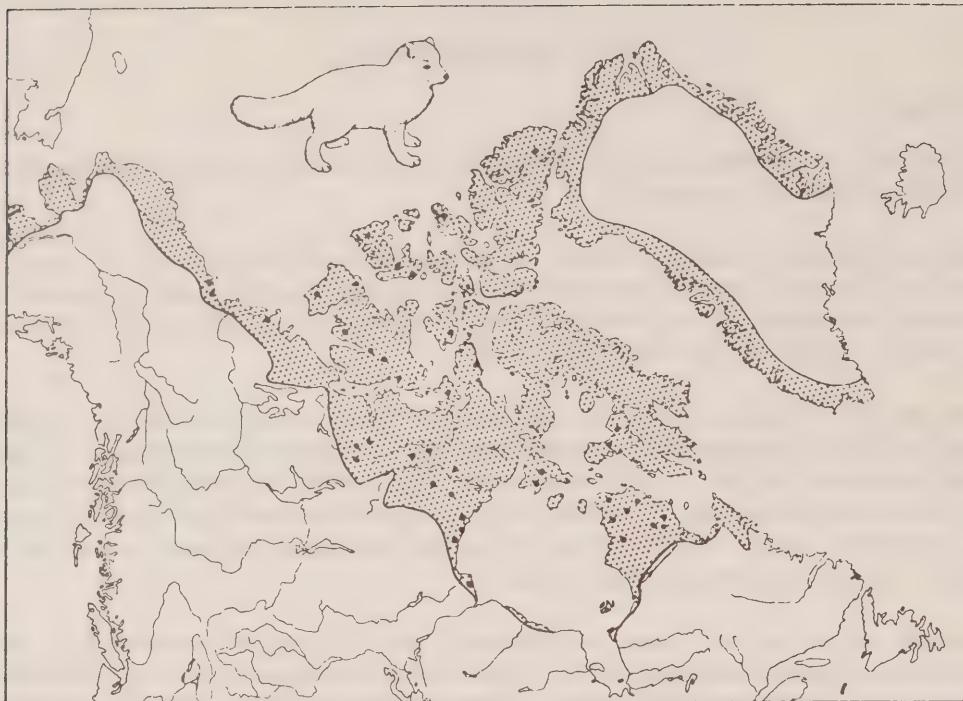


FIG. 8. Arctic fox (*Alopex lagopus*). Canadian breeding localities and approximate North American breeding distribution.



FIG. 9. Caribou (*Rangifer* spp.?). Canadian localities and approximate northern North American distribution. 1—*R. tarandus* ? *pearyi*, 2—*R. t.* *groenlandicus*, 3—*R. t.* ? *caribou*. Broken lines indicate intergrade population on western arctic islands, and seasonal overlap on western mainland.

Source: Macpherson, 1965.

Somerset Island, and the northern portion of Prince of Wales Island, had formed the southern limit of Operation Franklin.

It was not until the summer of 1962, when the aerial geological reconnaissance of the Boothia Peninsula and Somerset, King William and Prince of Wales Islands was undertaken by the G.S.C. that the remainder of the area was mapped. Their findings indicate there are no significant mineral showings in this region.

Due to the inaccessibility of this area and the unfavourable economic conditions of mining in areas as remote as this, no economic prospecting has been done and the full mineral potential of the region is unknown.

The only resource in this category at present being utilized by the Eskimos is serpentine. The economic value of this mineral is its use for carvings. At Gjoa Haven and Spence Bay the occurrence of the mineral appears to be very limited as only a small amount of carving is done at either settlement. The Eskimos state that the pieces used are found at random on the surface of the ground. At Pelly Bay there appears to be no outcroppings of serpentine or soapstone that are known to the Eskimos, soapstone is imported from Igloolik for the use of local carvers.

PART II

RENEWABLE RESOURCES – DISTRIBUTION

Terrestrial Mammals

Botanically the region is within the Arctic Zone and in spite of the unfavourable climatic conditions the low-growing vegetation does support the year-round two large herbivorous animals, the muskox and the caribou. The polar bear, wolf, Arctic fox, Arctic hare, weasel, lemming, seal, white whale and narwhal are the other land or sea mammals found in the region.

Investigation of the distribution of mammals in the region has not been all-encompassing and the range of some of those cited is not known. Some species are limited to the Arctic, whereas others range beyond the boundary of the Arctic. The Peary caribou and the white-faced muskox are apparently subspecies of those that dwell in a more southerly habitat and are limited to the high Arctic. The distributions shown in Figures 8 to 13, give the boundaries of the summer and winter ranges of the animals concerned. Figure 14 indicates the boundaries of the resource utilization areas in the survey region.

Wolves are the primary predator of the caribou in the region but appear to occur in lesser numbers than they do elsewhere. Weasels are also present in small numbers and are periodically caught in fox traps.

A small fur-bearing animal that is widely distributed throughout the area, but which is of little or no importance to the Eskimo in terms of food value or money, is the Arctic hare.

Lemmings are also indigenous to the region, and while of no economic or food value to the people the scarcity or abundance of these animals has an indirect affect on the economics of trapping. The lemming is a herbivorous animal and a decrease in the population occurs when its feeding range becomes exhausted. In northern latitudes about three years is required for effective range regeneration, with the result that there is a cyclical increase and decrease in the numbers of these animals. The chief predator impinging upon the lemming is the Arctic Fox, and the population fluctuation of the former is directly related to the cyclical variation in the fox population.

Arctic Fox

Arctic fox are common in all parts of the survey region and are probably the animal of most significance to the present subsistence economy of the Eskimo. The blue and cross foxes are periodically caught during the trapping season, but the Arctic fox is the animal most frequently taken.

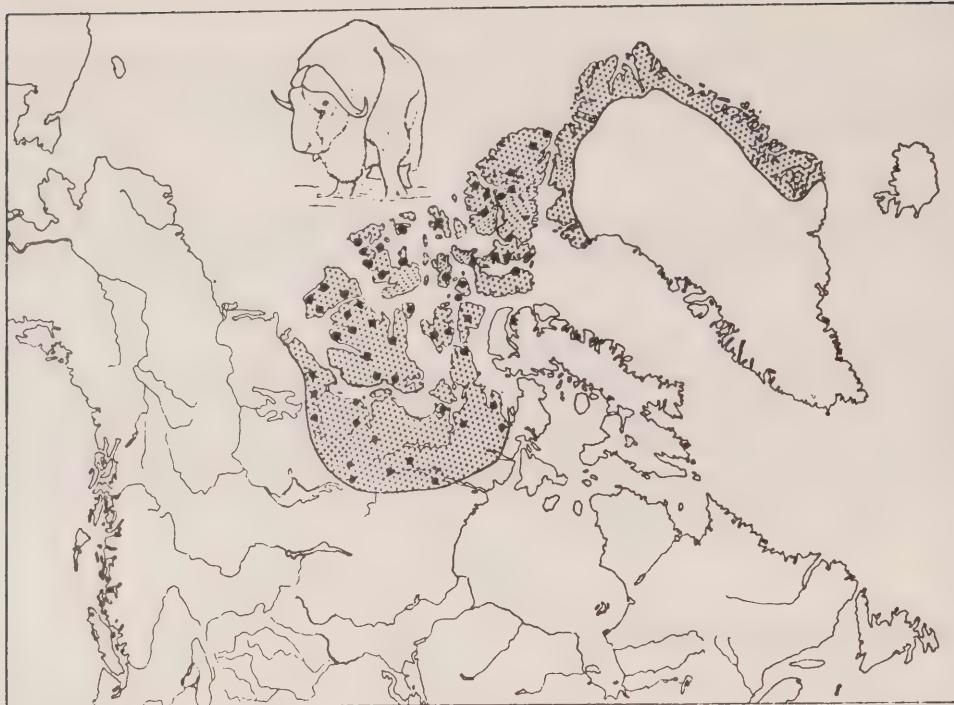


FIG.10. Muskox (*Ovibos moschatus*). Canadian localities and approximate distribution.

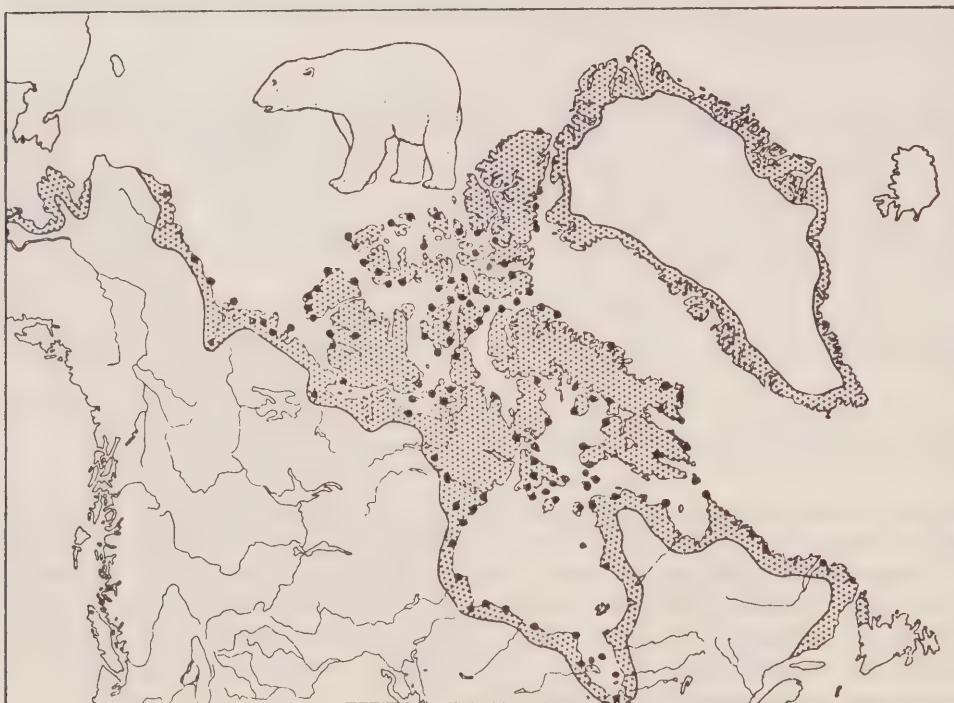


FIG.11. Polar bear (*Ursus maritimus*). Canadian arctic record localities (spots) and approximate nominal North American distribution (stippling).

Source: Macpherson, 1965.

Even though the ecology of the fox population is related to the incidence and distribution of the lemmings, in view of its wide distribution in the area the fox is substantially under-exploited even during the periods of low population levels.

Caribou

In terms of the non-monetary aspect of the subsistence economy, the caribou is the most important land animal occurring in the survey region.

Two species are found in the area. These are, the Peary caribou in the northern reaches of Boothia Peninsula, on Prince of Wales and Somerset Islands, and the Barren-ground caribou, whose summer pastures extend to the Arctic Coast. Some of the mainland caribou have been sighted throughout the area when they have moved northward before break-up and intergrades between the two species have also been observed (Manning 1961).

The range map showing caribou distributions can, as Kelsall (1968) suggests, only show general regions in which the animal might be found at specific points. These can be made only through assessment of annual distribution data over a long period.

The fact that a herd of caribou may change its migration routes and ranges, at least slightly, on an annual basis, is of considerable importance to the local people. During the summer of the survey, hunters at all the settlements stated the incidence of caribou on the mainland was unusually low. A number of them had, in fact, made unsuccessful hunting trips. One summer range, supporting a large concentration of caribou, has been the coastal area from Coppermine to the Kent Peninsula. At Cambridge Bay, where the Eskimos have been in the habit of hunting on the Kent Peninsula, the absence of caribou was most acutely felt.

Muskox

Muskoxen have been sighted at widely separated points on the islands of the Arctic Archipelego and on the mainland. They are found in some concentrations in the Thelon game sanctuary and the Bathurst Island region.

The only known occurrence of muskoxen in the survey area is on Prince of Wales and Somerset Islands. Manning (1961) has estimated there are approximately 2,300 animals for the whole of Prince of Wales Island, but concludes that this figure may be grossly inaccurate.

During the period of the survey, when on a reconnaissance flight by plane, discussions with Eskimos camped at Savage Point revealed that they had at various times sighted undeterminable numbers of the animals.

Tener (1958) has suggested that on Arctic Islands, where the muskoxen have been hunted relatively little, they have probably reached an equilibrium with their environment. As these animals do not appear to move long distances to satisfy winter and summer range requirements, these recent sightings may indicate the number these islands can support is probably small.

Polar Bear

Polar bears have an ecological preference for areas that possess suitable combinations of pack-ice (a hunting platform and protective cover), open water (where seals are able to reach the surface and are often abundant), and land (for denning, cover and auxiliary food supplies when seals are not available).

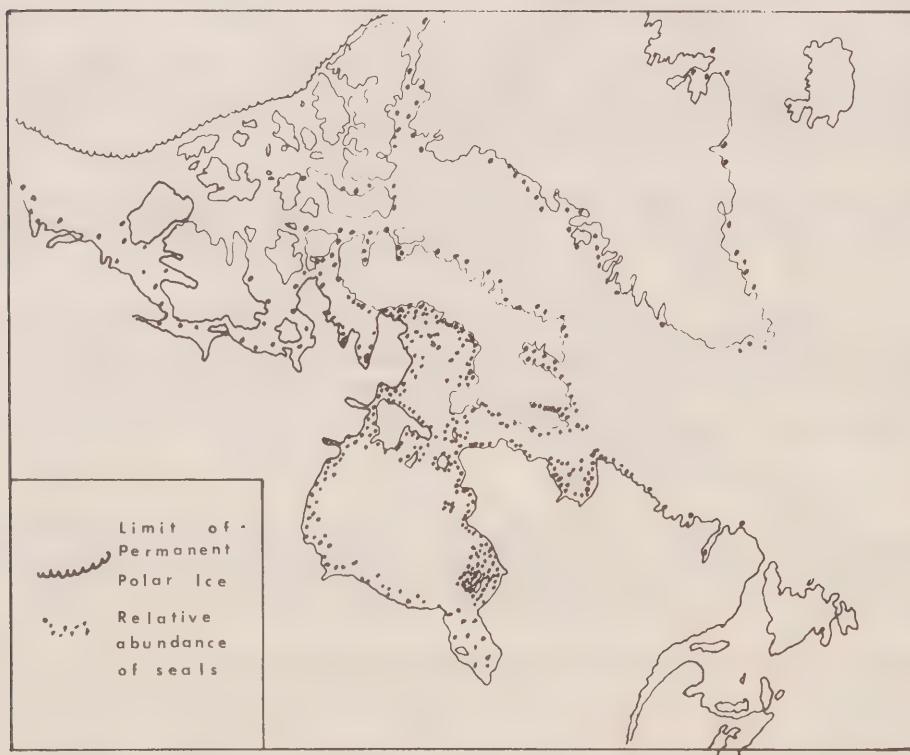
Exploitation of polar bears by explorers, whalers, sealers, and fur traders since the early seventeenth century has caused concern for their survival. The world population is about 10,000, of which about 6,000 are thought to be in Canada. In 1964, the total world kill was about 1,300. The Canadian kill had approached 600 (Harrington 1968). In the Northwest Territories, only Eskimos, Indians, and the few holders of a general hunting licence can legally hunt polar bears. Killing of cubs under one year of age or females accompanied by such cubs is forbidden.

FIG. 12 . D i s t r i b u t i o n o f R i n g e d S e a l .



Source : Mansfield, 1963.

FIG. 13 . D i s t r i b u t i o n o f B e a r d e d S e a l .



Source : Mansfield, 1963.

The recent rise in prices paid for polar bear skins has provided the impetus for increased exploitation of these animals, and a quota system instituted in the summer of 1967 limits kill in the Northwest Territories to 383. These quotas have been based on the regional distribution of polar bears and has set a ceiling on the kill allowed for each settlement. The quotas for the settlements in the study area for 1967-68 were Gjoa Haven 8, Pelly Bay 9, Spence Bay (including outlying camps) 23.

The animals are most frequently taken during the winter hunting and trapping season, when the Eskimos are travelling more extensively. Polar bear hunting results more from chance encounters than purposeful hunts.

Marine Mammals

White Whale and Narwhal

White whales and narwhal are known to be found in Peel Sound and Franklin Strait (Manning 1961). During the summer they also come far enough down the eastern shores of the Boothia Peninsula to be hunted by the Eskimos at Tom Bay, but they are seldom seen in any quantity as far south as this. During the field survey reconnaissance flight, a large number of white whales and narwhal were seen basking in wide leads in the ice and offshore waters at Savage Point.

The eastern side of Prince of Wales Island appears to be the western extremity of the known range of narwhals in the Canadian Arctic (Miller and Kellogg, 1955) and the southern limits of the range of both animals appears, as a rule, to be north of all three of the large settlements in the survey area. The Eskimos at Spence Bay stated that periodically both species are found in the vicinity of the settlement, but that the occurrence was infrequent.

Seals

Ringed Seal

In total numbers and geographical distribution, the ringed seal is the most common species known in the survey region, and is present in all seasons. Due to the ability of this animal to feed on a relatively large number of different food species its range or abundance is not limited by specific food requirements. This species are more numerous in regions with complex coastlines with wide expanses of fast-ice that is suitable for breeding purposes.

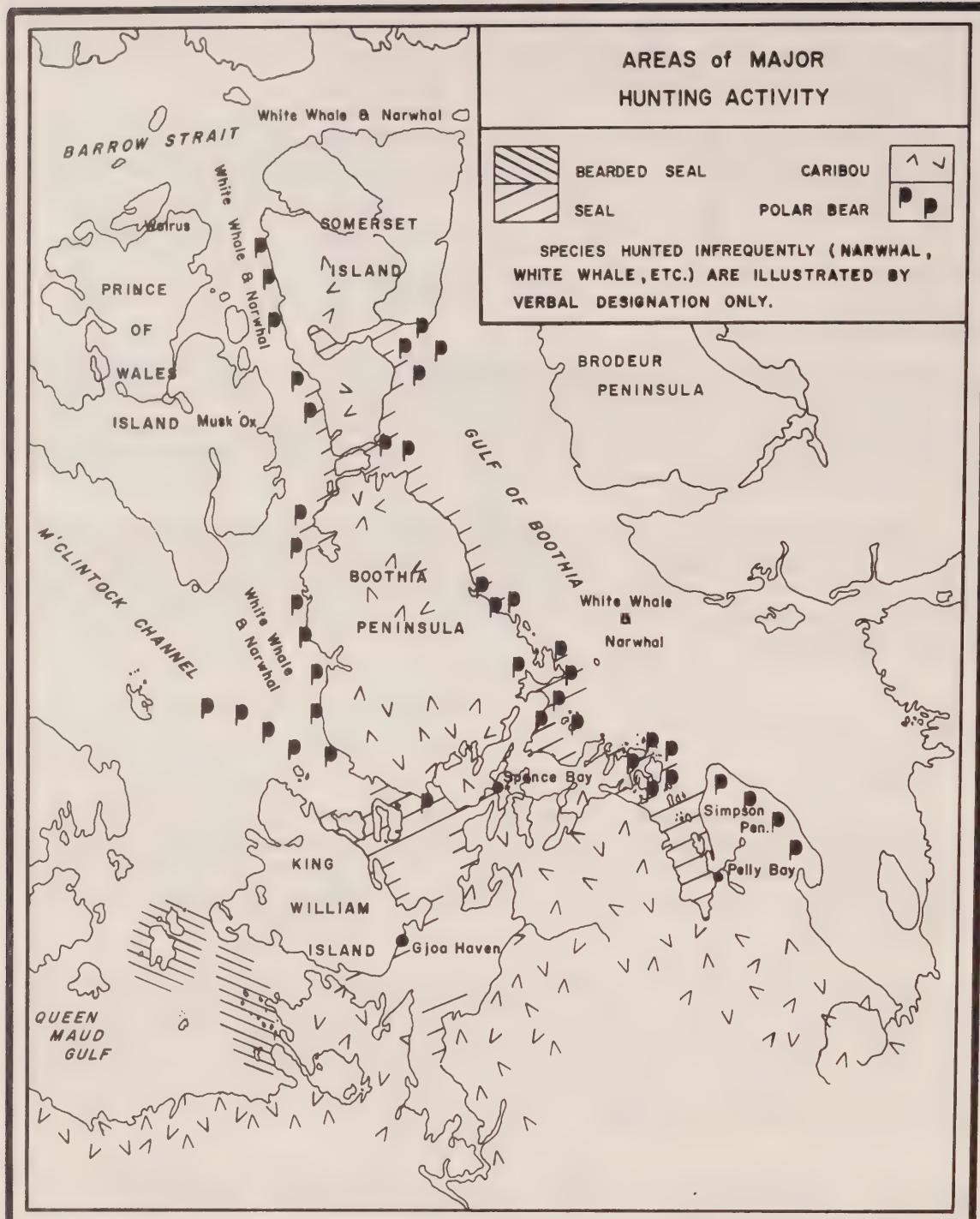
The habit of pupping on the ice makes the quality and quantity of fast-ice most important to the successful breeding of this seal. Good ice most often occurs along complex coast lines containing many bays with numerous islets scattered offshore. Along straight coasts, the ice is often unstable and there is usually only a narrow strip of fast-ice. Pups born in such ice risk early separation from their mothers and may become starvelings. Seals from northern latitudes are considerably larger, probably through the same effect of more stable ice conditions in these areas.

The average length of mature males is around 54 inches and weight about 150 lb, the females are slightly smaller. Seals from areas of stable fast-ice average 65 inches and 250 lb (Mansfield 1967).

Bearded Seal

This animal is a large solitary seal found most abundantly in the Arctic where shallow banks are free of land-fast ice during the winter. It is usually associated with moving ice on which it hauls out to rest and to breed in the spring. But in the open-water season it may sometimes be taken in river mouths where it hauls out on the sandbars to rest. It is doubtful whether the seal dives much below 50 fathoms in search of food, and is therefore usually found in shallow water. Males and females attain an average maximum length of 75 inches and a weight of 750 lb.

FIGURE 14



The animal is found throughout the survey region (Manning 1961) and is taken by the Eskimos at all of the settlements. At Pelly Bay they are reported to be most numerous among the chain of islands which extend from the Harrison Islands to Helen Island. During the spring, when the ice in the bay is in constant motion through the effect of tides and winds, there is a higher probability of the animals being found in the vicinity of the settlement. It is in fact during the spring and early summer that these animals are harvested along the chain of islands at the entrance of the bay where they are shot from a canoe.

The Eskimos at Gjoa Haven harvest the animals at Hat Island and among the islands to the northwest at Matty Island, the Beverly and Tennent Islands to the northeast, and among the bays and islands of the Adelaide Peninsula.

The groups at Spence and Thom Bay encounter the Ugjuk along the east coast islands and coastline south of Lady Parry Island, and in the sheltered sandy bays from Kent to Inglis Bay on the west coast.

Fish

As yet the only scientific research on the variety of species, their abundance and geographical distribution in this region, has been confined to a study of char at selected locations in Pelly Bay during the summer of 1967. Species of both trout and whitefish have been taken in nets by the Eskimos at various locations, and small polar cod have been caught in offshore nets. Arctic char is fished in numerous lakes and streams and used predominantly as dog food.

The areas most intensively harvested are the lakes and streams in the vicinity of settlements and camps. Small winter commercial fishing operations were carried out in 1967-68 at Gjoa Haven and Pelly Bay that will be discussed later in this chapter.

Further studies are required on the fish resources of this region to expand scientific horizons and to provide data on which to base proposals for harvesting.

Birds

Manning (1961) has given an exhaustive list of the birds found in the region. The most common of these are ducks (old-squaw, pin-tail, common eider, king eider), geese (brant, snow goose), jaegers, loons, gulls, Arctic tern, snow bunting, and various sandpipers. All are migrants and the numbers vary from year to year. Rock and willow ptarmigan, and the snowy owl may spend the greater part of the year in these northern habitats.

Ducks, ptarmigan, and geese are taken by the Eskimos, but in insufficient numbers to be considered of economic importance.

HARVESTING

Introduction

Harvesting in this region implies the participation of people generally classified as hunters and trappers in the taking of fauna for consumption or sale of skins. The definition is relatively clear when wage labour is negligible and the adult males of a group are engaged in these activities on a full-time basis, or are dependent upon welfare, or have developed a combination of both.

At Gjoa Haven and Spence Bay with the availability of wage labour, it becomes difficult to develop a measure by which it is possible to determine accurately at what point a general hunting licence holder can be categorized as being predominantly a hunter. At Pelly Bay the procedure is less difficult, as prior to 1967 only a minimal amount of wage labour was available. In this year, there was a boom in construction in the community and wage employment was extensive. With the completion of the houses, roads, and airstrip permanent wage employment levels will have increased to the extent that the services in the community have.

TABLE 11

Eskimo Hunter's Estimate of Harvest, January 1967 to July 1968

Individual Hunter	SPENCE BAY & CAMPS			GJOA HAVEN			PELLY BAY		
	Bearded Seals	Other Seals	Caribou	Bearded Seals	Other Seals	Caribou	Bearded Seals	Other Seals	Caribou
1	2	160	7	—	90	21	1	20	2
2	—	40	1	—	40	9	6	41	9
3	—	30	5	—	—	1	—	10	2
4	—	50	15	—	5	30	—	26	11
5	—	40	—	—	100	2	—	15	—
6	—	75	5	—	50	20	—	14	2
7	—	30	3	2	50	25	—	3	3
8	—	35	—	—	10	7	—	20	18
9	—	25	2	—	20	8	—	45	5
10	2	35	15	—	4	3	1	20	13
11	1	25	8	2	8	15	—	20	11
12	—	10	—	—	3	—	2	25	19
13	—	20	12	1	40	30	—	80	—
14	3	100	9	1	40	20	—	5	12
15	2	25	16	1	40	5	—	3	9
16	—	105	5	—	60	8	3	50	4
17	—	30	1	—	8	—	2	4	—
18	—	2	—				1	10	1
19	—	20	13				—	—	10
20	—	5	2				1	30	9
21	—	22	5				2	7	37
22	—	20	4				—	35	7
23	1	25	8				1	15	15
24	—	80	1				—	16	14
25	—	25	8						
26	—	20	—						
27	—	13	—						
28	—	6	—						
29	—	5	10						
30	—	—	2						
31	3	105	16						
32	—	20	—						
33	—	1	2						
34	—	—	3						
35	—	30	8						
36	—	25	12						
37	2	100	13						
38	1	200	4						
39	—	—	2						
40	5	110	35						
41	2	20	2						

Table 11 – Concluded

Individual Hunter	SPENCE BAY & CAMPS			GJOA HAVEN			PELLY BAY		
	Bearded Seals	Other Seals	Caribou	Bearded Seals	Other Seals	Caribou	Bearded Seals	Other Seals	Caribou
42	—	8	3	—	—	—	—	—	—
43	—	10	—	—	—	—	—	—	—
44	2	80	10	—	—	—	—	—	—
45	—	28	—	—	—	—	—	—	—
46	4	15	15	—	—	—	—	—	—
47	16	150	15	—	—	—	—	—	—
TOTAL	46	1980	297	7	568	204	20	514	213
Average Kill	.9	42.1	6.3	.4	33.4	12	.8	22.3	9.2

Number of
General Hunting
Licences Issued
to Eskimos

83

49

39

If income is used as a measure of classification it is found that, with the exception of the permanent camp groups, the best harvester earn more at other pursuits. If time is used as an index it becomes increasingly difficult to classify hunters and trappers, as the amount of time they are theoretically supposed to spend on these activities does not, in fact, always coincide with the suppositions. Opportunities for wage employment, adverse weather conditions and illness are some of the factors that impinge on the amount of time an individual will spend on these pursuits.

The present classification of people as hunters and trappers is more a result of the absence of other occupational categories that can be applied to the situation, than a factual description of the circumstances as they exist. With the rising level of hunting and trapping activities (through the use of ski-doos) by the people in wage employment, any attempt to classify hunters or trappers in absolute numbers would, in the circumstances, be misleading. All that can really be said is that licence holders are potential harvester, whose participation in these activities can be markedly changed through the availability of other forms of cash income.

The amount of time that could be spent at summer camps with the Eskimos, or on hunting expeditions with them, was limited, and no information of value can be offered on the economics of seal or caribou hunting in terms of time expended, distances travelled, value of food consumed, gasoline and shells expended, and such like.

As official records of game harvested were not maintained on the settlement level, an attempt was made to obtain this information on an individual interview basis with the assistance of an interpreter. The figures given in Table 11 are a sampling of estimates provided by individual Eskimos. It would appear from this sample, and the average kill per hunter, which is shown at the end of the Table, that subsistence harvesting still provides a substantial amount of the food needs of the Eskimos.

In almost all instances these figures were estimates on the part of individuals, and it would be difficult to assess their level of accuracy. The nature of the data does not permit generalizations or estimates on the size of the harvest, and figures will not be offered pertaining to amounts of food harvested and types of utilization of these faunal species.

The fluctuations in fur prices over the years, and the cyclical variations in the size of the possible harvest, have made hunting and trapping an unstable source of income. Tables 12 and 13, give the yearly harvest for selected species of fine fur traded at the settlements and the average dollar-value of a pelt.

TABLE 12

Average Prices Paid for Fur in Survey Area 1961-67

Average Dollar Value of Species

Year	Polar Bear (dollars)	Fox			Lynx (dollars)	Weasel (dollars)
		Blue (dollars)	Red (dollars)	White (dollars)		
1966-67	107.00	9.12	4.08	12.00	—	.40
1965-66	108.00	6.62	5.41	15.40	23.80	.35
1964-65	101.00	4.44	—	8.92	—	.47
1963-64	46.30	5.77	1.50	14.42	—	.39
1962-63	45.00	4.08	1.50	12.57	—	.68
1961-62	62.33	4.56	2.03	9.70	—	.62

Source: Game Branch Records

Trapping

Arctic Fox

Arctic fox are found in all parts of the survey region, but numbers vary with cyclic periods of population levels and the extent to which areas are harvested. Figures 15 to 19 give the distribution of the intensity with which areas are trapped. The white fox is the species most frequently trapped, but other varieties, such as blue or cross foxes, are periodically caught. The latter represents less than 1 per cent of the fox skins traded.

Figures 16-18 seem to indicate that traps are strung out in a line, rather than in a loop, which would appear to suggest that by utilizing the former method the trapper is free to hunt during the return trip. Some loop circuits are used by the people trapping out of the settlements, as the tending of these traps return the individual to the point of departure and it is a more economical use of time for the people running a day-line.

The areas surrounding the settlements are continuously the most intensively harvested. Not only are there a larger number of people trapping in these areas, but the density of traps is high, although the ratio of traps per trapper is lower than that of the individuals who set their traps further from the settlement. The proportion of the total harvest is higher for the settlement-based trappers, but the individual take is lower than for those people who venture further afield, and for that of the camp groups.

Trapping patterns vary to the extent that there are three almost distinct methods. First there is the settlement-based trapper who runs a day-line which means that the traps can be checked and reset in one day of travel. The second occurs when the settlement-based trapper goes some distance from the settlement to set his traps and spends roughly five to seven days in the process of tending them. Thirdly, there is the trapper based at a permanent camp who spends a comparable amount of time tending his traps as the group in the second category, but only comes in to the settlement to trade.

Figure 15

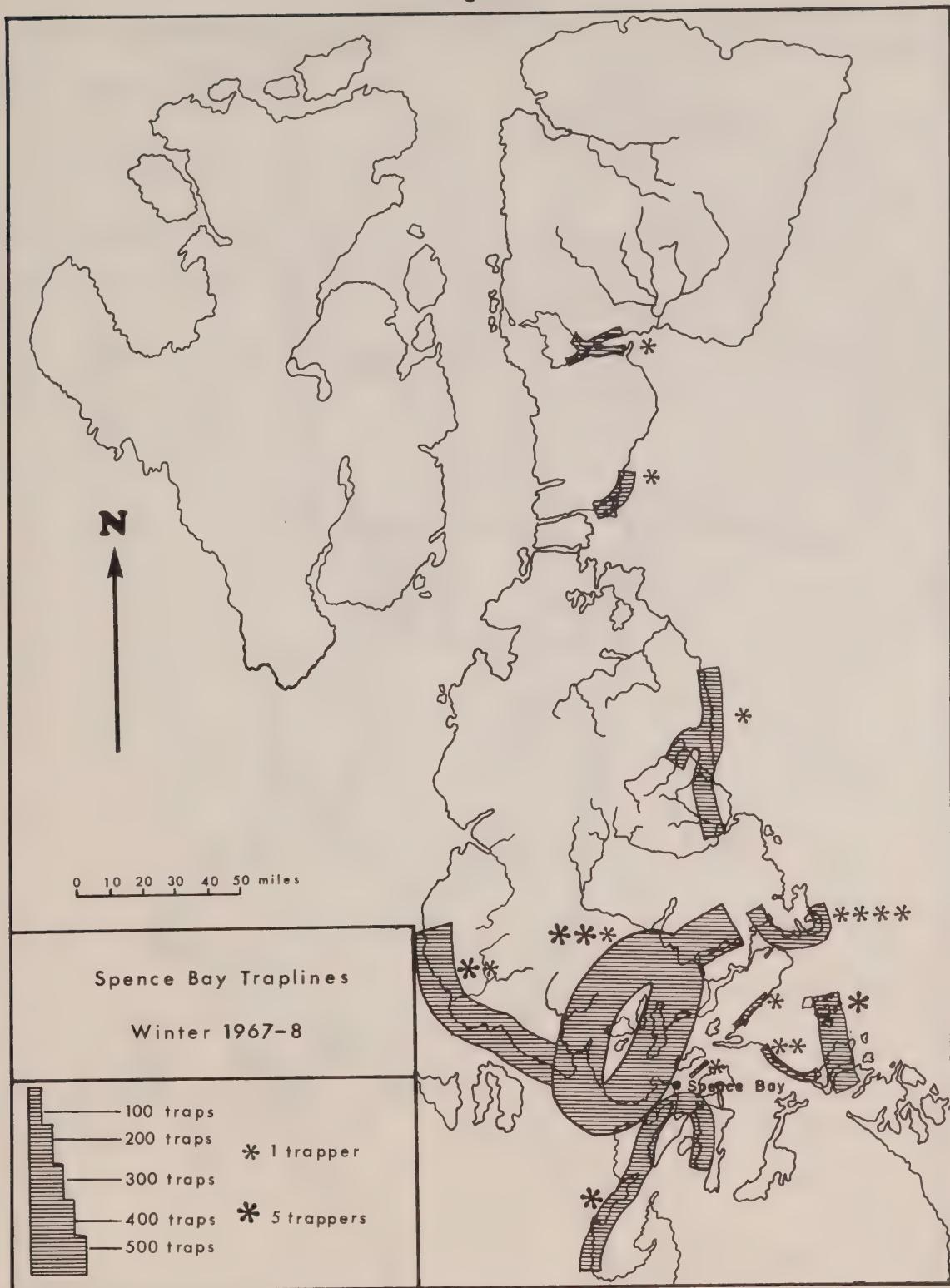


Figure 16

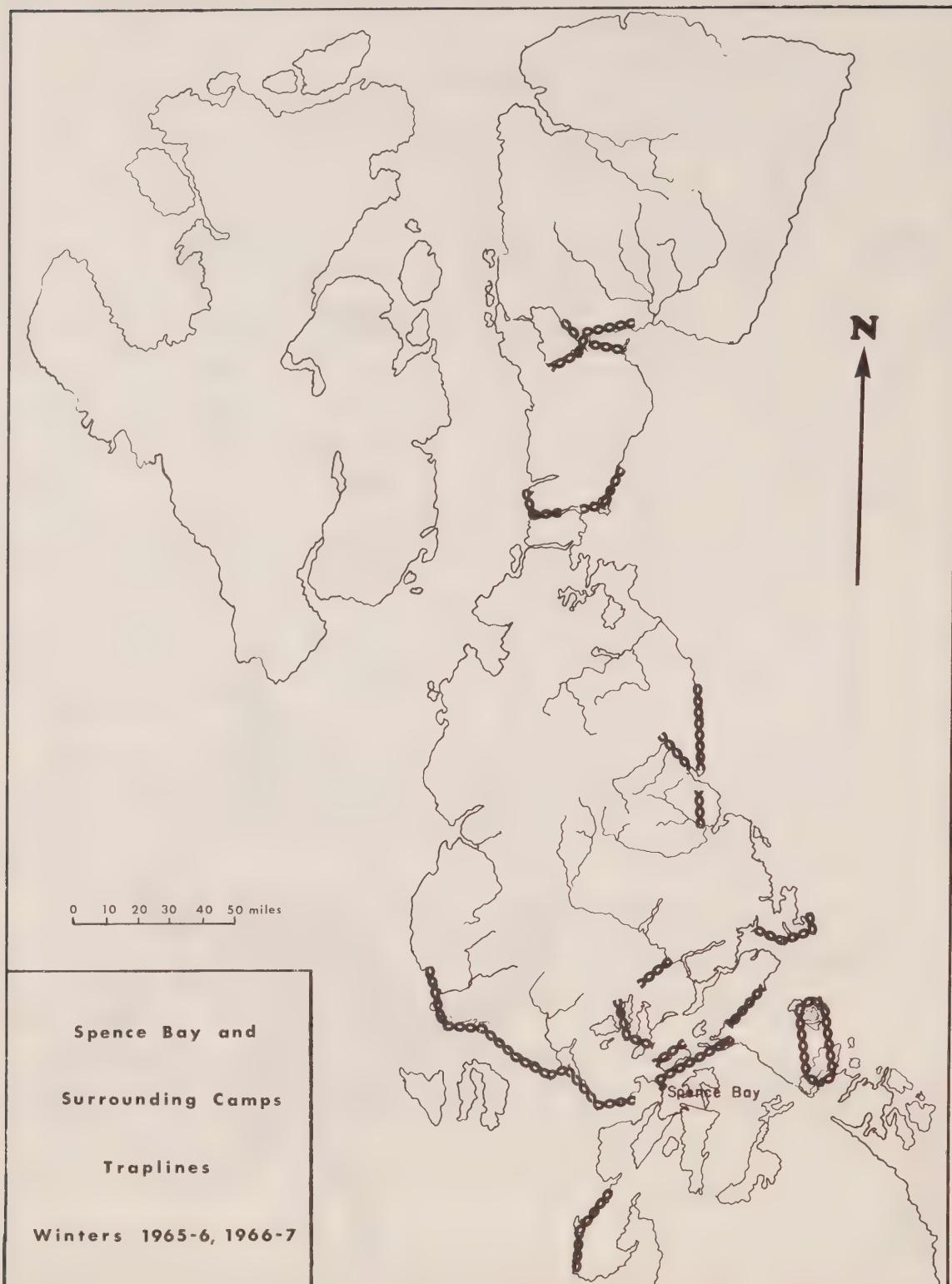


Figure 17

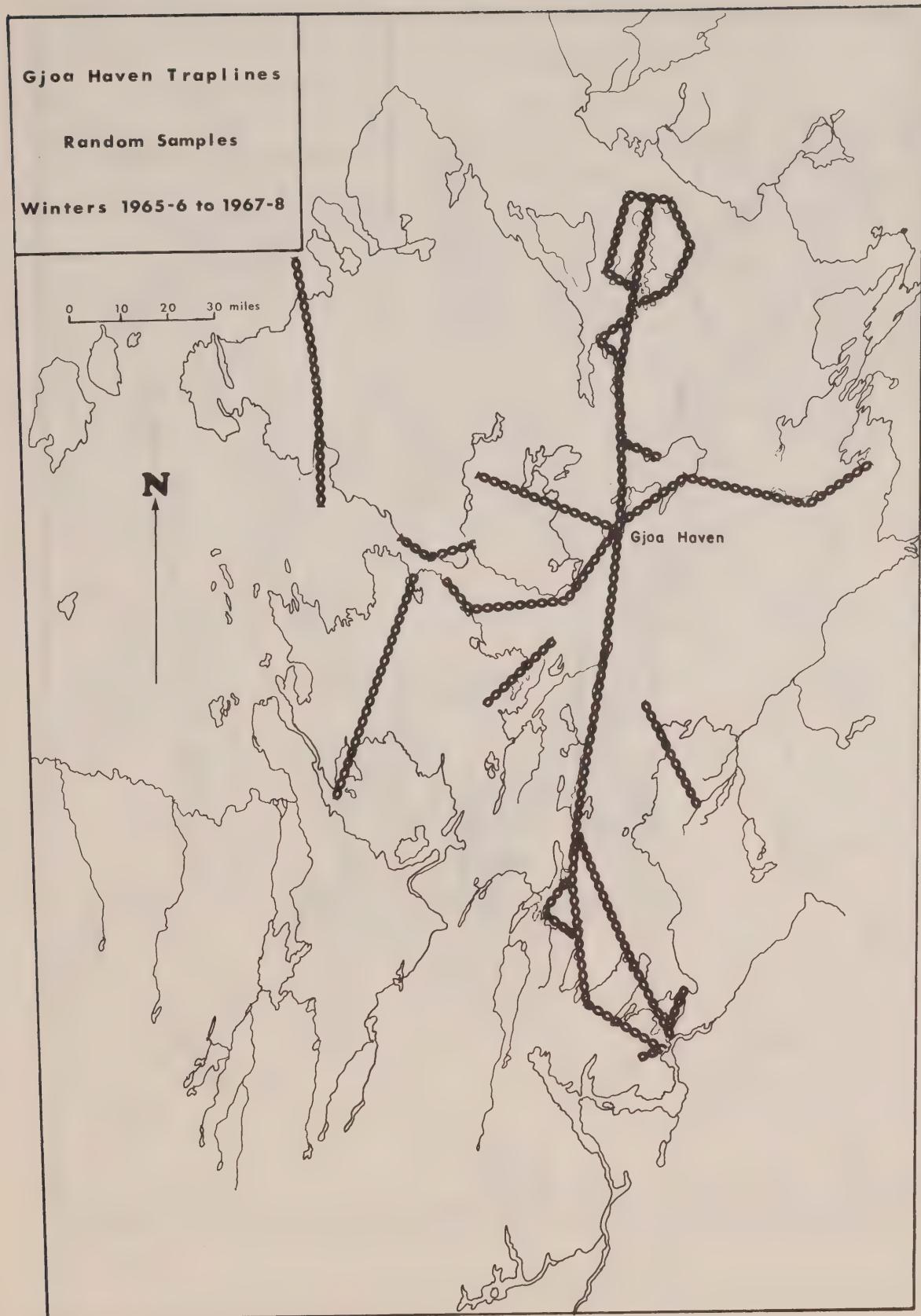


Figure 18

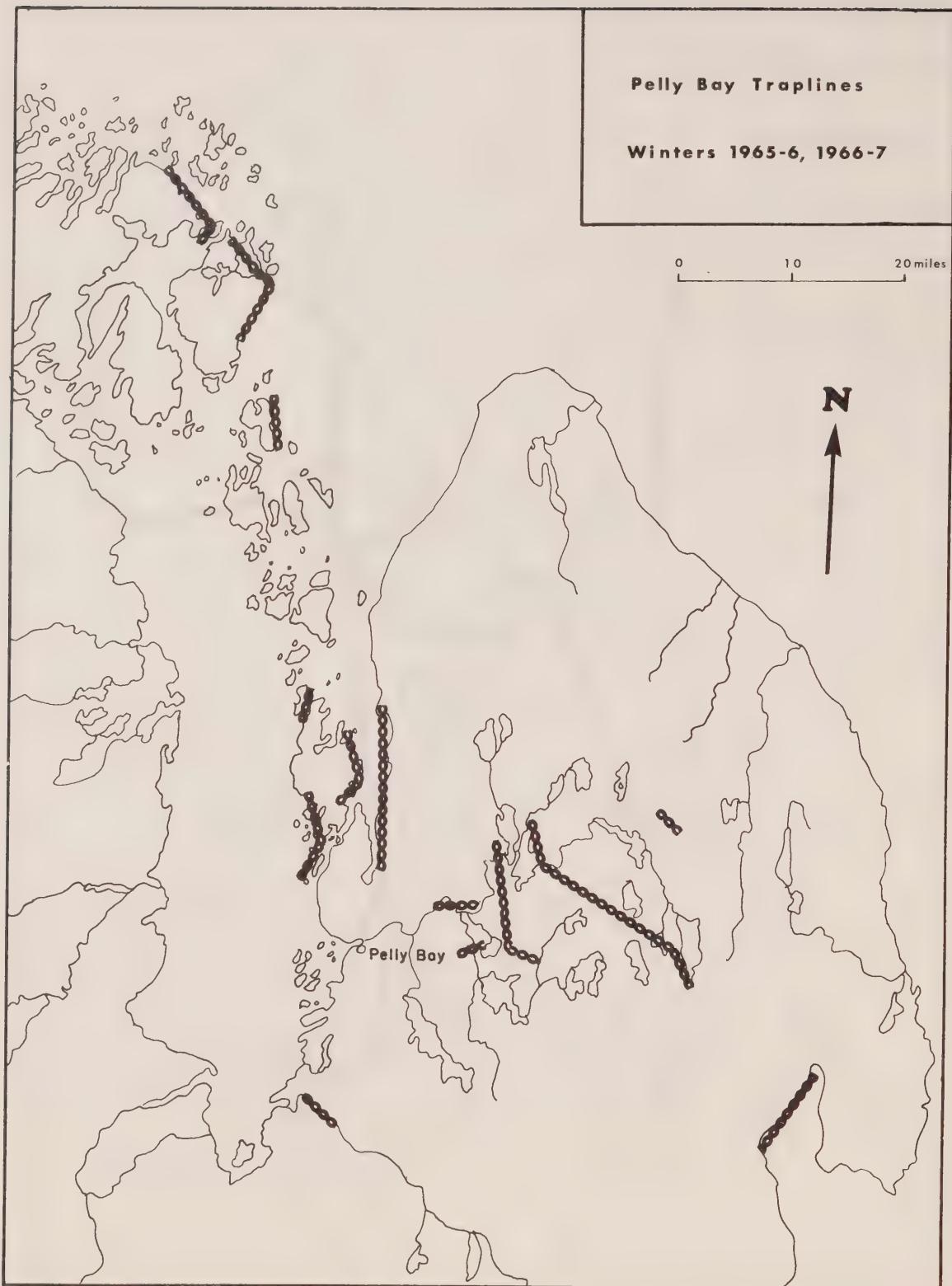
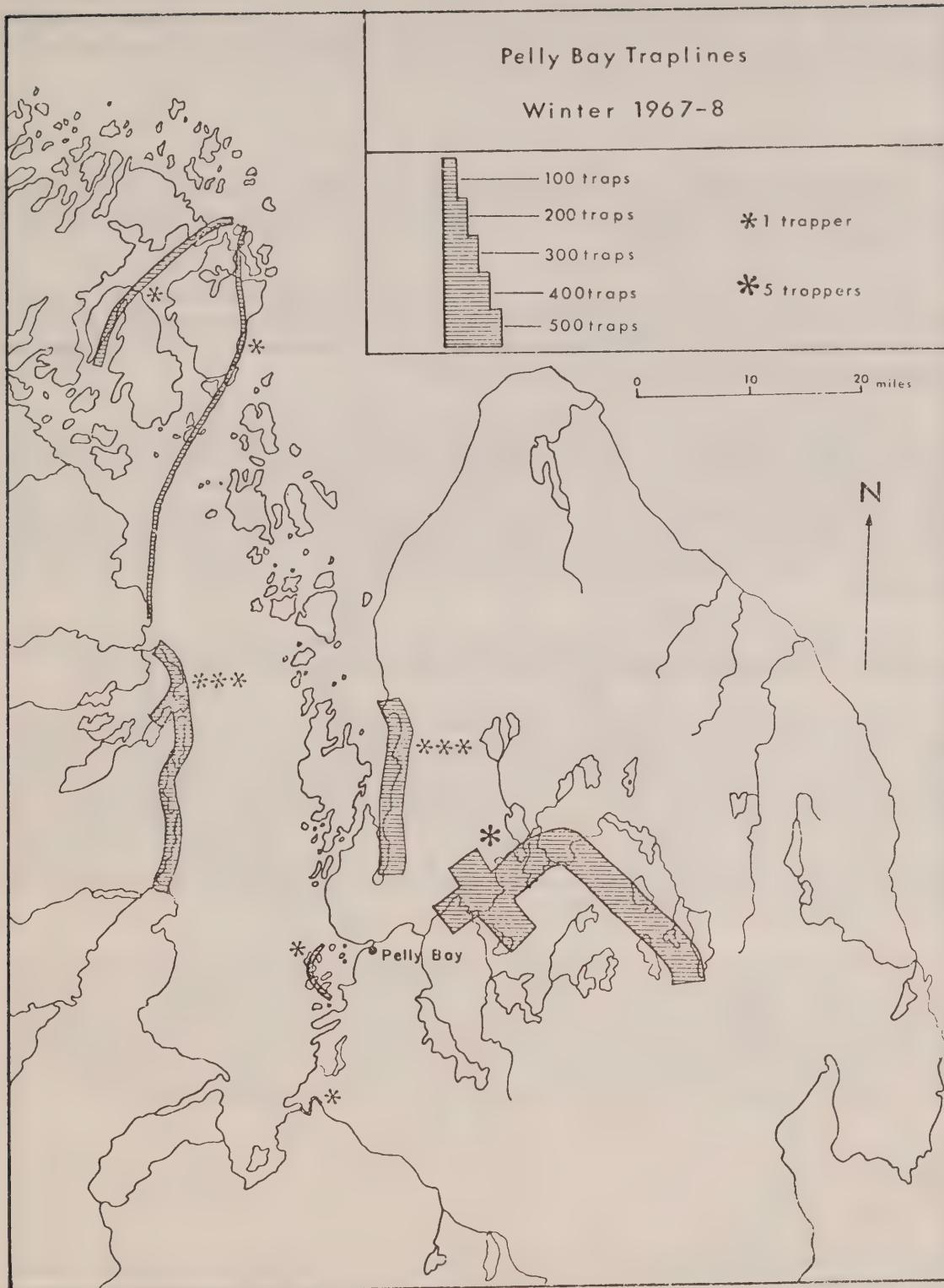


Figure 19



Trapping commences with the baiting and setting of traps. The trapper then returns to the camp or settlement for a period of two to three weeks, after which he revisits the trapline for another week or so to clear and reset traps. Bad weather, illness, transportation problems, and other unforeseeable incidents intervene in the sequence and visits to traplines tend to be erratic. Periodically traps are abandoned entirely and are lost by being covered by the early snowfalls of the next winter.

Hunting

Travelling and hunting methods are directly related to the seasonal ice conditions. During the late winter and spring the solid ice-cover is ideal for travelling by dog team or ski-doo, and during these periods some of the longest journeys are made.

With the onset of cold weather in the fall, patches of surface ice begin to form, and travel by marine craft ceases as ice becomes thicker and more extensive. By the end of November the Eskimos can again travel on fast-ice by dog sled or ski-doo, but it is not usually until January, when the ice has reached its maximum thickness, that very much hunting is done along the floe edge.

As the weather becomes progressively warmer in the spring the surface layer of snow melts and travel becomes sluggish. When this begins to occur hunters will usually travel in the evenings, as the wet snow freezes forming a crust which makes for good travelling. As ice conditions worsen and the amount of open water increases, a canoe and outboard motor are carried on the komatik. With numerous areas of open water it becomes necessary to ferry the dogs or ski-doo until the time arrives when the canoe and motor are more used than the komatik. With the disappearance of the ice, marine craft become the usual mode of transportation.

Where dog-teams are used for travelling, the size of the team varies according to the distance to be travelled and the load to be transported. However, the average size of a team used is about ten dogs.

The use of ski-doos has increased at all of the settlements, and weekend ski-doo trips in search of caribou by hunters travelling in pairs is an activity that appeared to be gaining in popularity at all three communities. It has been mentioned earlier in the report that when ski-doos are used for long distance travel, a komatik is usually towed behind at least one of the vehicles. A simple rope-hitch appears to be used and since the pulling power is distributed through only one line of force, breakdown of the vehicles occurs when the point of attachment is subjected to erratic tensions. The likelihood of mechanical breakdown is increased when ski-doos have to traverse large areas of rough ice, and in this environment the wisdom of travelling in pairs becomes self-evident.

During the winter and spring, hunting is as a rule an extension of trapping activities except in those instances in which traps are set in the vicinity of a settlement, and hunting requires special long-distance journeys in search of game. At other times of the year, seal hunting determines the location of camps and the movement of hunters. Caribou hunting is a more sporadic activity. The distance travelled to the animals range requires that these hunting expeditions are undertaken as a specific activity, and summer camps of any duration are no longer a feature of the seasonal cycle of activities affecting family groups.

Terrestrial Animals

Caribou

As the migration paths of the barren-ground caribou are to the south of the settlements, caribou hunting is a specialized activity. These animals are predominantly harvested at the time when they occupy their summer pastures. During the winter, small herds of Peary, intergrades, and strays from the main herds are encountered throughout the region. At this time of the year, caribou hunting by the natives of the settlements is done in the same general direction to the south. At Spence Bay, caribou are also hunted fairly intensively during the winter on the mainland in the general area north of the settlement.

Figure 20

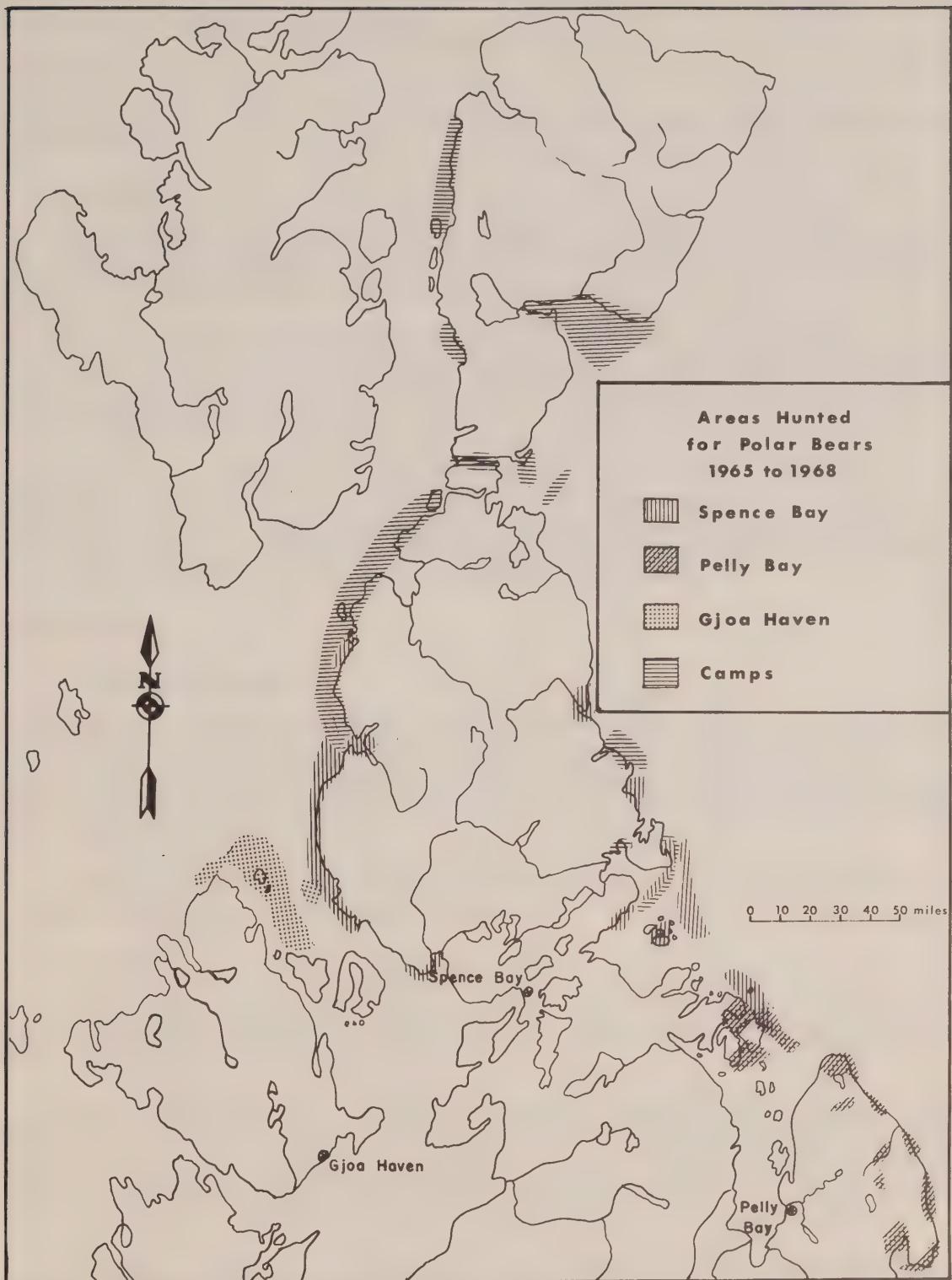
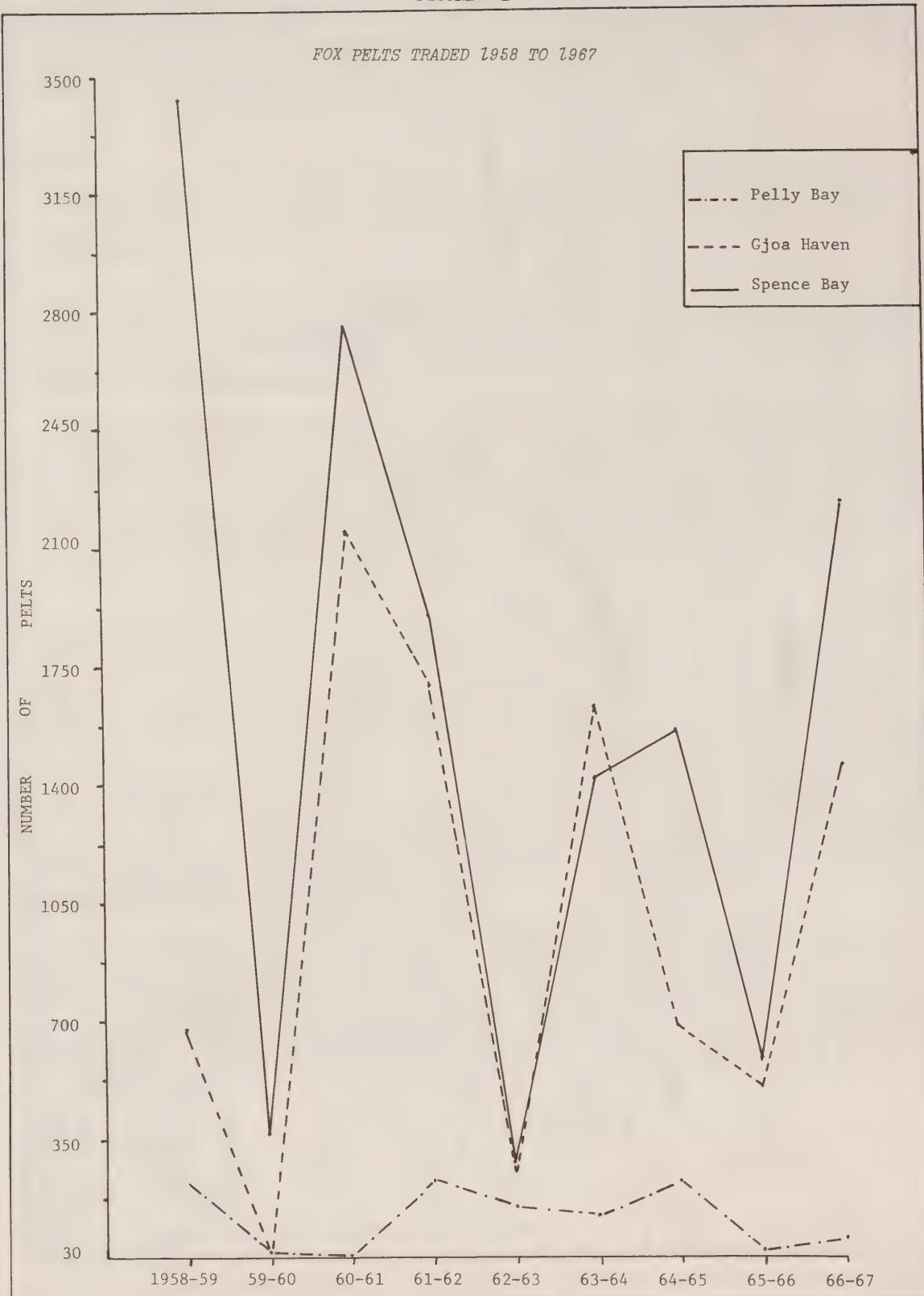


FIGURE 21



SOURCE: Game Branch Records.

Some portion of kills is used to satisfy immediate needs, but as a rule carcasses are not skinned and butchered until the hunter has returned to the settlement as the hides are of no commercial value and act as a protective covering during the return journey.

Muskox

The hunting of these animals is prohibited by law and they are excluded from the discussions on natural resources.

Polar Bear

This faunal species is taken while hunters are engaged in the harvesting of other species. The animals are, as a rule, encountered during the winter while the Eskimos are primarily engaged in trapping. Figures 14 and 20 show the areas in which polar bear have been harvested for the last few years.

The animals are encountered more by chance than purposefully hunted. The discovery of fresh tracks or a sighting assure pursuit. As a rule dogs are used when pursuing a bear. If the kill has not been made too far from a camp the carcass is skinned and butchered at the camp, otherwise it is skinned where it falls and as much meat as possible is transported back to camp.

Polar bears are relatively scarce at Pelly Bay and Gjoa Haven, the quotas of kills allotted for the settlements has been based on the harvests of previous years. The present allocations are Gjoa Haven 8, Pelly Bay 9, Spence Bay (including outlying camps) 23. The yearly harvest and average prices paid for skins are given in Tables 14 and 15. The prices paid at Gjoa Haven and Pelly Bay have in part been induced by the proximity of the DEWline sites where demands for the skins have been high.

Marine Animals

White Whale and Narwhal

These animals are not found with any regularity or abundance in the vicinity of the settlements and are harvested when encountered. Periodically, the Eskimos at Thom Bay, when travelling by canoe, sight a stray or a small school and harvest what they can. After the animals have been shot, carcasses are towed back to camp where they are butchered. When shot, indiscriminately wounded animals escape and losses also occur through sinking.

As the only portion of these animals that is traded are the narwhal tusks, the importance of these animals to the money economy of the area is negligible.

Ringed Seal

Seal hunting not only dominates the local hunting economy but also affects residential patterns. From the spring to the fall the location of camps and the movements of hunters are basically related to the harvesting of seals.

In total numbers, season of occurrence and geographical distribution, the ringed seal is the most common species known in this region. During the winter, the adults and some immatures remain under the ice in bays and fiords by maintaining a number of breathing holes, and most of the younger seals stay at the edge of the fast-ice. In the spring the seals come out onto the ice near their breathing holes to bask in the sun and moult their hair coat. They fast at this time, and by break-up the blubber is less buoyant.

The methods employed in the harvesting of seals varies with the seasons. During the period of ice-cover three methods of hunting are employed. Throughout the winter seals are taken either at their breathing holes or along the flow edge and in the spring while basking on the ice. When hunted at their breathing holes, hooks, harpoons or rifles may be used singly or in combination. As the animals are harpooned or fired at point-blank range there is little chance of missing. When shot, the harpoon is used to haul the body out onto the ice. At the floe edge the animals may either be hunted from the fast-ice or the



PLATE I - White whale being butchered at a camp on Savage Point, Prince of Wales Island.



PLATE II - Schoolboy using traditional fish harpoon to lay-up fish for the winter at Creswell Bay camp.

pack-ice. In these instances the seal is shot and when the use of a canoe is necessary, the body is retrieved by means of the harpoon. The retrieval rate of kills is highest during the winter as the seal blubber is at its densest and the animals are more buoyant than at other times of the year.

In the spring when they come out on to the ice near their breathing holes they are shot with rifles. At this time the animals are easily seen and are approached by the hunter using a blind made of white material stretched over a light wood frame. The hunter approaches to within approximately 200 yards of the quarry at which point, with his rifle resting on the frame, he shoots the animal as it raises its head to look around.

From break-up to the onset of winter seals are hunted from canoes or boats. The animals are shot as they come up for air. This approach is, for a number of reasons the least efficient of all the methods employed. The first of these is the smallness of the target. As the characteristic attitude of the ringed seal when breathing at the surface allows only the snout and a small portion of the head to protrude above the water, the hunter requires a high degree of expertise to spot and hit the animal before it dives. Other factors that reduce the probability of a kill are the movement of the boat, the effect on visibility of ripples and small waves, and the distance of the quarry. When shooting from ice-pans or the shore-line, conditions are considerably improved but higher losses of kills are sustained due to sinking as the animals are less buoyant because of their thinner layer of blubber. Toward the end of break-up and in the early summer, when the surface waters are lessened in density by the fresh melt-water from the sea ice, losses may reach as high as 50 per cent of the seals killed.

TABLE 13

**NUMBERS OF SEALSKINS TRADED AND
AVERAGE OF PRICES PAID IN THE AREA**

Year	Settlement	Type of Skin			Average of Prices Paid Per Skin		
		Bearded Seal	Silver Jar	Common Jar	Bearded Seal \$	Silver Jar \$	Common Jar \$
1966-67	Pelly Bay	—	—	96)		
	Gjoa Haven	1	57	230	) 17.50	7.29	7.91
	Spence Bay	—	—	1,672)		
1965-66	Pelly Bay	—	—	—)		
	Gjoa Haven	7	332	151	) 10.55	6.34	6.03
	Spence Bay	8	—	2,042)		
1964-65	Pelly Bay	—	—	—)		
	Gjoa Haven	3	33	464	) 25.56	13.45	10.58
	Spence Bay	3	71	2,136)		
1963-64	Pelly Bay	—	—	—)		
	Gjoa Haven	—	173	247	) —	21.28	14.35
	Spence Bay	—	440	1,060)		
1962-63	Pelly Bay	—	—	—)		
	Gjoa Haven	—	—	124	) —	—	12.34
	Spence Bay	—	—	401)		
1961-62	Pelly Bay	—	—	—)		
	Gjoa Haven	—	—	13	) —	—	3.64
	Spence Bay	—	—	12)		

Gamebirds

As a rule gamebirds are taken while the Eskimos are engaged in harvesting other faunal resources. With the exception of ptarmigan, there is a seasonal distribution in regard to the harvest which can occur only during their period of migration to the north. As birds are hunted with .22 and .222 caliber rifles rather than shotguns the number taken annually are small.

Fishing

Both the anadromous and landlocked char are present throughout the region, however, little is known about the abundance of the fish resources. As the Eskimos are primarily seal eaters relatively little fishing is carried on.

During the period of open water fishing is done with 4-inch nylon gill nets which are set in lakes or streams, but when the char runs in June and August the natives at permanent camps prefer to use harpoons for fishing in the fast flowing shallow streams. During the fall run the most intensive fishing is done in order to lay up a store of dog food for use during the winter when other food resources are low due to inclement weather or the unavailability of game.

UTILIZATION AND EXPLOITATION

Utilization will be taken to mean the contribution to the subsistence economy that occurs through domestic consumption, the sale of pelts, or both. Exploitation is defined as the extent to which fauna is harvested in relation to the abundance of the species, and sustained yields that are harvestable without endangering the viability of the species.

For the purposes of this report, these two categories will be treated together. As stated earlier, it was not possible to obtain accurate figures of fauna harvested, and quantitative data can only be presented for the species whose pelts or skins were traded. Estimates of effective utilization of country food becomes virtually impossible without a comprehensive knowledge of the size of an entire harvest and the attendant amount of wastage. Without the basic structure of the magnitude of the harvest only general suppositions can be made in regard to exploitation within the framework of sustained yields. The problem is further complicated by the fact that little is known about the populations of some species, and sustained yields have not been determined. For others, such as the polar bear, populations and sustained yields have been postulated and limits set on the numbers to be harvested.

Owing to these limitations, no attempt will be made to relate a dollar value to country food in order to try and determine the extent to which this contributes to the economy of a group. If wastage of country foods were known, it would be a factor that would have to be subtracted from the numbers killed, and would in itself present an index of the extent of the utilization of a species and its relative importance to the subsistence economy.

In the early spring, before the ice on the inland water routes has become impassible, family groups from Spence Bay migrate to Netisksiuvik Inlet, where most of the seal hunting in the area is done. At Gjoa Haven seal hunting at this time of the year does not occur in any intensity until there is sufficient open water to allow boats to reach Hat Island, which forms a base for those families proposing to spend the summer sealing. The Eskimos at Pelly Bay hunt for seals among the offshore islands, and with the break-up of the ice, seals in large numbers are taken in the bay.

During the winter there is no floe-edge hunting at Gjoa Haven, as the ice forms a continuous surface that extends almost to the western coastline of the Bothia Peninsula. During the winter of 1967-68 it appeared that only four Eskimos from this settlement had hunted at breathing holes. At Spence Bay and Pelly Bay there appeared to be a little more sealing done in the winter, particularly by groups travelling to the south in search of caribou and those out trapping. For these two settlements the period of intensive seal harvesting appears to last from spring to freeze-up, while at Gjoa Haven it is confined to the season of open water.

TABLE 14
FUR TRADED AT FORT ROSS AND SPENCE BAY, 1937-58

Year	Polar Bear	Fox			Weasel	Seal Common Jar
		Blue	Red	White		
<u>Fort Ross</u>						
1937-38	—	17	—	2,455	4	—
1938-39	—	8	—	3,033	69	—
1939-40	—	14	—	1,916	3	10
1940-41	2	12	—	1,108	—	101
1941-42	—	17	—	1,933	—	—
1942-43	missing	—	—	—	—	—
1943-44	—	—	—	17	—	—
1944-45	—	4	—	587	—	—
1945-46	—	29	1	1,626	41	—
<u>Spence Bay</u>						
1949-50	—	16	—	2,026	6	58
1950-51	—	—	—	3,460	60	106
1951-52	—	47	3	2,964	86	78
1952-53	—	18	1	1,347	6	136
1953-54	34	28	1	2,163	10	114
1954-55	15	55	4	5,938	98	125
1955-56	—	30	8	3,165	33	28
1956-57	12	5	—	1,608	16	163
1957-58	20	11	—	2,913	—	248

Source: H.B.C. Spence Bay

Seal nets were first introduced into the area in the spring and summer of 1967. They do not appear to have been used to any extent during the following winter except at Pelly Bay where they were tried experimentally. At the time of the survey, a resource development officer of the Department from Cambridge Bay spent the summer assisting a number of Eskimo families from Gjoa Haven to establish summer camps at Hat Island and in developing techniques of sealing with nets.

As with the fine fur, prices of sealskins have fluctuated. The numbers traded annually and the average prices paid per skin are given in Table 13. It is difficult to estimate what proportion the numbers traded represent of the numbers harvested as the Eskimos leave the skin on a carcass when caching them for the winter.

Bearded Seal

The bearded seal or square flipper is not abundant in the region. The largest number is taken by the Eskimos at Thom Bay. The skins of these animals are valued by the Eskimos for domestic use and when Tables 11 and 13 are compared it can be seen that only a very small portion of the skins are traded. As Table 11 gives the responses of only a proportion of hunters at each settlement it would be difficult from even these figures to determine the actual harvest.

These animals are usually shot from a canoe during the late spring and early summer while they are at rest on moving ice. Due to the size of the animal the carcass is, as a rule, skinned and butchered at the site of the kill to be able to transport it back to the settlement.

TABLE 15
FUR TRADED AT SETTLEMENTS, 1958-1967

Year	Settlement	Polar Bear	Species			Lynx	Weasel	No. of Licences Issued to Eskimos			
			Fox								
			Blue	Red	White						
1966-67	Pelly Bay	11	—	—	55	—	—	39			
	Gjoa Haven	10	3	—	1,453	—	—	47			
	Spence Bay	19	9	6	2,235	—	1	86			
1965-66	Pelly Bay	13	—	—	28	—	—	35			
	Gjoa Haven	20	1	—	495	—	—	49			
	Spence Bay	43	2	1	594	1	—	81			
1964-65	Pelly Bay	8	—	—	223	—	—	33			
	Gjoa Haven	12	5	—	692	—	3	47			
	Spence Bay	40	8	—	1,558	—	29	75			
1963-64	Pelly Bay	7	—	—	134	—	—	39			
	Gjoa Haven	4	10	3	1,633	—	2	49			
	Spence Bay	9	—	1	1,414	—	12	75			
1962-63	Pelly Bay	11	—	—	159	—	—	35			
	Gjoa Haven	14	3	1	253	—	—	49			
	Spence Bay	27	2	—	280	—	—	72			
1961-62	Pelly Bay	7	2	—	238	—	—	28			
	Gjoa Haven	16	—	1	1,691	—	34	55			
	Spence Bay	41	11	—	1,901	—	32	74			
1960-61	Pelly Bay	11	—	—	4	—	—	*			
	Gjoa Haven	7	6	1	2,162	—	—	13			
	Spence Bay	42	9	—	2,760	—	8	64			
1959-60	Pelly Bay	7	—	—	22	—	—	2			
	Gjoa Haven	3	—	—	3	—	—	13			
	Spence Bay	8	—	—	371	—	1	47			
1958-59	Pelly Bay	9	—	—	220	—	—	*			
	Gjoa Haven	1	—	—	675	—	23	21			
	Spence Bay	47	20	1	3,429	—	45	45			

Source: Game Branch Records

*Figures were not available for these two years

One implication arising from the concepts of utilization and exploitation is that if the rights of the Eskimo are to be preserved in regard to harvesting of fauna for food or monetary gain, it might be reasonable to assume that, as long as these rights are not infringed, alternative considerations are possible in regard to the actual killing of an animal. Were this not so, an ethnic shooting preserve will have been created by the Ordinances, Acts, and Regulations governing the harvesting of natural resources.

The suggestion is that within the framework of the laws as they apply to the limitations imposed on the species harvested, the Eskimo can gain substantially if non-resident non-Eskimos are permitted to participate in the harvesting.

One example of this could be related to the polar bear quota. The harvesting of this animal could be developed as a trophy hunting industry to cater to a specific market. The Eskimo would be deprived of the fur and the head of the animal which is at present valued from \$250 to \$400. This can be well offset by wages for acting as a guide and for the rental of equipment. If the whole process was managed through the local Eskimo Co-operatives both a summer and spring tourist industry could be developed by combining sport fishing and trophy hunting. The other monetary benefits accruing would affect the community as a whole through the price structure of the co-op and in being able to provide this agency with a source of income that could be used as capital to develop other Eskimo-owned and operated enterprises.

An extension of this suggestion could be made to include caribou and seal hunting to implement the program for the tourist-hunter, and once established, this type of utilization might provide a more stable form of income than is possible with the fluctuations in fur prices that occur.

Arctic Fox

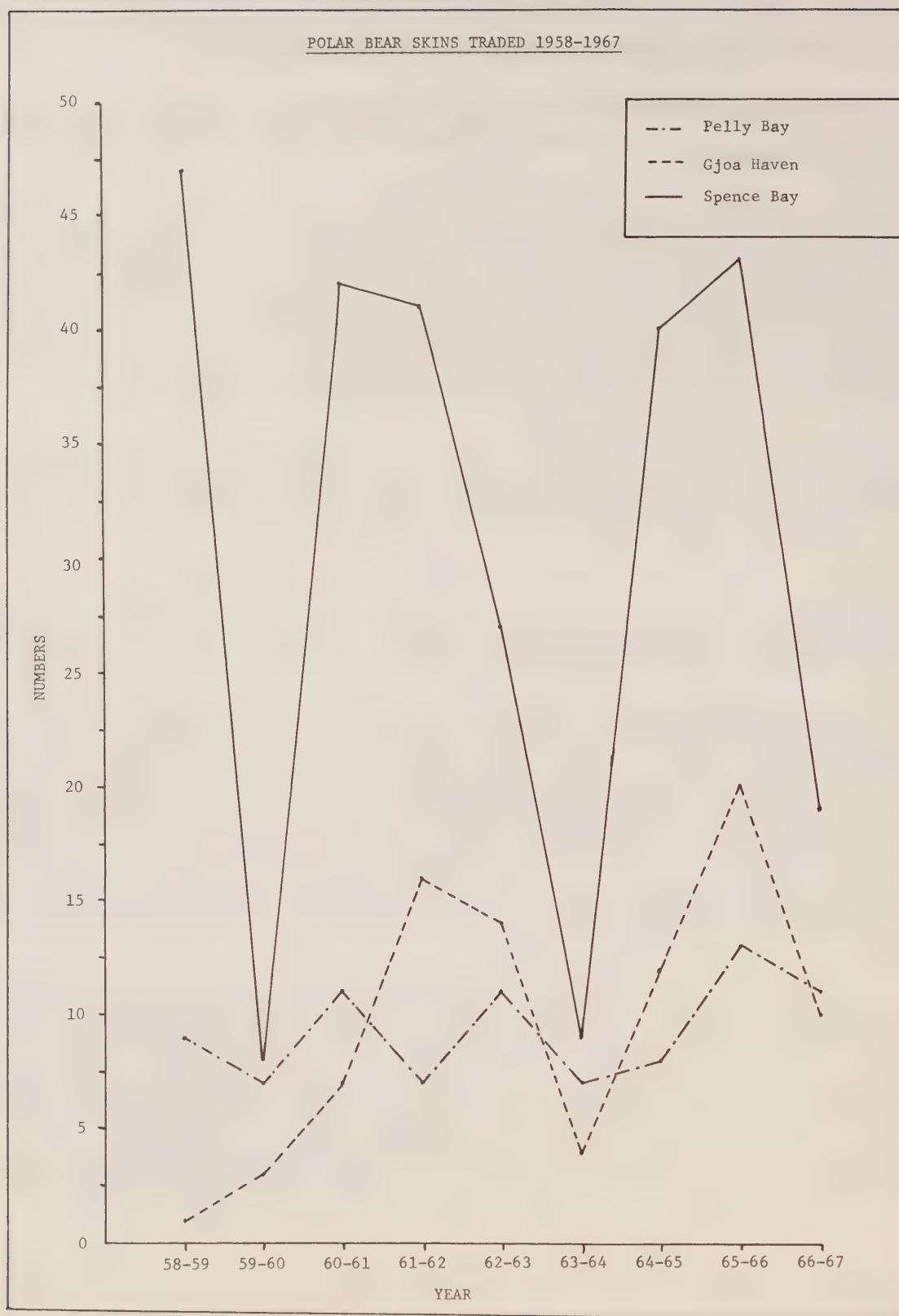
The efficiency of utilization is probably the highest for this animal which is harvested for the monetary value of the fur; the carcass is used for dog food.

When the figures for Spence Bay in Table 14 are compared with those in Table 15, it would appear that the exploitation of this resource has not risen in proportion to the increase in the number of trappers. It would be difficult to determine whether this has resulted from the relocation of the group in a less productive area, or a lowering of interest in trapping by people who have gradually become more urbanized, or a lessening of the need to trap extensively as money has become more available through wage earnings and statutory allowances, or whether all these factors have exerted an influence and the magnitude of their relative importance. The fluctuations in fur prices that have occurred over the years have made the monetary returns from trapping the least stable source of income, which has, in all likelihood, also exerted an influence on the motivation of the trapper/hunter.

The pattern that has developed of leaving families in the settlement while the men set and tend the traps, undoubtedly induces a sense of loneliness in the trapper and increases the burden of chores they have to perform while out on the trap-line with the result that the motivation towards this activity has probably been lessened. On the other hand, the rising level of income from other sources and the attractions of settlement living may have developed a positive value that has served to reinforce the developing negative perceptions of trapping. The monetary returns from trapping, and the present more sedentary way of life, appear to indicate that at present people at all these settlements prefer to run day-lines rather than spend longer periods on trap-lines even though the returns are less. It might be suggested that perhaps the trapper today is trapping only to the extent to which his cash income needs to be supplemented.

In view of the wide distribution of these animals in the area there seems to be no doubt that the species is under exploited, except within the vicinity of the settlements. However, the increased use of ski-dos might lead to an extension of the intensively trapped areas without the trapper having to spend any more time on this activity.

FIGURE 22



SOURCE: GAME BRANCH RECORDS

Polar Bear

This animal is not only prized for the monetary value of the skin but for the large quantity of food that the carcass provides. Wastage in the utilization of this resource appears to be minimal. Harrington (1964) has estimated that approximately half of the meat is consumed by Eskimos, the remainder is used for dog food.

The exploitation of these animals along the Boothia Peninsula appears to have been relatively high for a number of years. The present conservation methods should help to reduce the harvest and restock the region. The numbers traded over a nine-year period have been given in Figure 22. Harrington stated that figures of skins traded represent only a portion of the animals harvested. He suggests that about 20 per cent of the pelts are retained for personal use as sledge robes, sleeping platform covers and are occasionally made into items of clothing.

Caribou

The efficiency of utilization of this animal has decreased to the extent to which the hide is being less used as winter garments and bedding. It would be difficult to estimate the extent to which Eskimos are still fabricating winter clothing from these skins. However, it seems probable that as hunters and trappers are spending less time out at winter camps, these garments are lasting longer, and that with families remaining in the settlements there is less need for the skins as bedding. Some proportion of the skins are still used by people travelling during the winter. In regard to the carcass, there appears to be little if any wastage in the utilization of the edible parts.

With the general rise in the population levels of the barren-ground caribou, it seems likely that this animal could stand a slight increase in exploitation. Community organized hunts in the spring and fall would seem to be a more efficient approach to the harvesting of the caribou, particularly if freezer space in the settlements was expanded to allow for storage of carcasses. If these hunts were supervised by an officer of the game branch, and sponsored by the local co-operatives, wastage of the harvest could be minimized and the produce sold in the settlements on a non-profit basis until the scheme became established. The sale of the viscera is likely to ensure that the meat is used for human consumption which might help to stimulate a better usage of seal and fish for dog food.

Seals

In 1967 the Arctic Biological Station, using McLaren's formula, provided the Department of Indian Affairs and Northern Development with an estimate of the ringed seal populations for a number of sites. They suggested that the maximum sustainable yield for Spence Bay and Gjoa Haven was 3,200 and 2,600 respectively. If an arbitrary disposition of 2,600 is made for Pelly Bay, in spite of the fact that the coastline from which the seal population in this area is drawn provides a larger surface of fast-ice than that for Gjoa Haven, errors in evaluating the potential and harvest for this settlement are on the side of an under-estimation of the resource.

Table 16 gives the number of sealskins traded at the settlements in the past few years which may be contrasted with the estimated sustainable yields already mentioned.

The communication from Dr. A. W. Mansfield states that when allowances are made for skins not traded and seals lost by sinking, it is clear that ringed seals are being fully harvested at Spence Bay. Even with the arbitrary figure allocated to Pelly Bay it can be seen from the previous table that an increase in the harvests for Gjoa Haven and Pelly Bay could be sustained by the present estimations of the seal populations.

In this communication it is also suggested that the waters about Somerset Island and Prince of Wales Island would appear to support substantial seal populations which might be considered for future exploitation. The suggested abundance of seals in this area was confirmed by the three families camped at Savage Point on the west coast of Prince of Wales Island. Evidence was also available from the number of partially used seal carcasses deposited around the camp.

TABLE 16
Sealskins Traded, 1961-67

Year	Settlement	Bearded Seal	Species Silver Jar	Common Jar
1966-67	Pelly Bay			96
	Gjoa Haven	1	57	232
	Spence Bay			1,672
1965-66	Pelly Bay			
	Gjoa Haven	7	332	151
	Spence Bay	8		2,024
1964-65	Pelly Bay			
	Gjoa Haven	3	33	464
	Spence Bay	3	71	2,136
1963-64	Pelly Bay			
	Gjoa Haven		173	247
	Spence Bay		440	1,060
1962-63	Pelly Bay			
	Gjoa Haven			124
	Spence Bay			401
1961-62	Pelly Bay			
	Gjoa Haven			13
	Spence Bay			112

There appears to be considerable wastage in the methods employed in harvesting these animals and in the process of utilization. As stated previously, the losses due to sinking can run as high as 50 per cent in the late spring and early summer and except for breathing-hole harvesting the losses from shooting are high enough to encourage further participation by government agencies to assist the local people to develop skills in techniques of seal harvesting with nets.

Part of the problem of wastage of faunal resources is a logistical one. The abundance of a species has tended to develop specialized tastes for certain parts of the viscera which in turn has led to a tendency on the part of the Eskimo to kill more than his requirements would ordinarily dictate. Another factor attendant on the problem of wastage is the size of the animal and whether the entire carcass can be transported or not. This may be dependent on whether hunting is the purpose at the time of the kill or whether hunting has been combined with some other pursuit.

As not all skins of seals taken are used to fabricate clothing and footwear or sold, the inefficiency of utilization is increased when unskinned seals are cached. Despoilage of caches by other foxes and deterioration raise the level of wastage that could be avoided if freezer storage space was available or through other means of utilization.

Present under-exploitation of the seal population in certain parts of this region might be increased to a level that would, within the sustainable yield, be sufficient to support the development of a centrally located cannery. Local co-operatives could purchase a proportion of the carcasses harvested for storage in freezers that could be resold as dog food, and the seal livers, which are a highly prized native food, could be treated in the same way. As dog-teams become fewer through the increased usage of ski-doos almost the entire seal harvest would be available for processing.

Cambridge Bay is the hub of the air services to the coastal island settlements in the central Arctic. A tanning and garment manufacturing enterprise located at Cambridge Bay might be a viable industry if sealskins from the other communities were fed into this centre.

A discussion concerning the utilization and exploitation of the bearded seal is limited as it is difficult to estimate the regional population of this species and almost impossible to make any suggestions as to what proportion the skins traded represents of the actual kill. The model presented by McLaren of the ratio of bearded seals to ringed seals has been developed for the regions to the east and south of the survey area but as these waters are contiguous it might be possible to arrive at even a vague estimation of the population of this species for this region. If the lowest availability index given by McLaren of 0.8 is applied, a sustainable yield of 330 is indicated which is well in excess of the amounts likely to have been harvested. With these animals also the number of skins traded annually is no indication of the size of the harvest. These skins are valued for their toughness and waterproof qualities which are ideal for making the lower portion of Eskimo boots, dog-whips and harnesses, and most of the skins are kept for domestic purposes.

Fish

As a local source of food-fish would seem to be both under-exploited and inefficiently utilized. Caches laid up for dog feed are frequently despoiled by bear and other fauna, or are abandoned.

During the fall of 1967, and the following winter, the co-operatives at Pelly Bay and Gjoa Haven sponsored small commercial fishing operations at the Kellett and Back Rivers. The quotas for these operations were 10,000 lbs. and 40,000 lbs. respectively. The catch for Pelly Bay amounted to approximately 2,000 lbs. of Char which was sold in Yellowknife, while most of the harvest from the Back River operation was utilized for dog food at Gjoa Haven.

As very little scientific work has been done on the fish resources of the region it is difficult to assess what proportion of the stock is harvested. From discussions with members of the Arctic Biological Institute in Montreal it appeared that with the amount of fishing done at present the resource is well under-exploited.

There would appear to be a potential for sport and commercial fishing of char at both Spence Bay and Pelly Bay on a site rotational system whereby streams and lakes are first opened to the sport fisherman for a period of two-three years, and then to commercial fishing for a similar period of time. On this basis of rotation of sites the areas fished could be allowed a respite of 20-25 years at least in order for restocking to occur. The fish of little or no commercial value could be utilized locally as dog food and the other exported.

This system would provide additional employment and earnings by adding trophy fishing to the attractions offered tourists and after the tourist season the Eskimo guides would be able to participate in the fall harvest of the commercial fishery.

A commercial fishing operation in the fall would also provide a backhaul for the commercial aircraft at a period of the year when freight and passengers are minimal.

Other Species

With the exception of the ptarmigan, birds in the region are migratory and exploitable within narrow limits. Whales and narwhal appear to be fully exploited when encountered and utilized to the fullest as a food resource. Their numbers and occurrence are unpredictable and it is doubtful whether hunting methods can be improved or the harvest increased to produce a viable industry.

Non-renewable Resources – Utilization and Exploitation

As stated earlier in this chapter very little is known about the potential of the non-renewable resources in this region. The only resource of this type of economic value that is utilized is soapstone which

is fashioned into carvings by the Eskimos at Spence Bay. At the time of the survey exploitation was minimal as the amount of carvings produced at this settlement were so few that they were almost custom made.

It was not until the winter after the period of field work that it was learned the handicrafts officer at Spence Bay had located a large outcrop of soapstone on Somerset Island. Further evaluations of this find are to be carried out during the warmer weather in the hope of being able to quarry sufficient quantities for distribution in large quantities to the settlement.

Savage Point Relocation Project

One other avenue of approach to increasing the exploitation of faunal resources has been tried at Spence Bay. In the spring of 1968, three families were willing to try a relocation project. They were assisted with loans, equipment and transportation, and established at Savage Point on the northeast shore of Prince of Wales Island approximately 250 air miles northwest of Spence Bay. According to Eskimos familiar with the area, fur and game resources were good. At the time of the writing of this report, figures are not available of the expenditures, and returns from fur, so that the economics of the project are difficult to evaluate. But from a brief review of some of the costs involved in this project, the economic feasibility of this type of venture is doubtful.

The costs of establishing and maintaining satellite communities have been examined by Currie (1963) and the results of this project will be useful in evaluating the present status of the feasibility of satellite communities particularly as they apply to this area. It is worth mentioning that the Eskimos themselves have tried the process of relocating in more intensively stocked areas and have gradually abandoned permanent camps in favour of living in large communities. Examples of this have been the movement of families away from Fort Ross after the closure of the H. B. C. post followed by their relocation around the post at Spence Bay and the relocation of families from Back River at Gjoa Haven. Two more recent examples have occurred when most of the families from the Fort Ross and Cresswell Bay area settled at Arctic Bay in 1967, and with the movement into Spence Bay of the group from Thom Bay.

Savage Point is as isolated as Cresswell Bay from the main stream of traffic. Due to ice conditions in Franklin Strait this group are in fact only accessible by air at such times as the ice-cover is of sufficient depth to support an aircraft, or when there is enough open water along the shoreline to allow a plane to land. The territory in which the camps are located has rarely, if ever, been harvested and should be more productive than that around Cresswell Bay.

The cost of chartering an aircraft to and from Savage Point is approximately \$500. Apart from the initial expenditure on relocation, children from these camps will have to be airlifted in and out every year to attend residential school. On these occasions supplies can be flown in. If the take in furs does not appreciably exceed that of the other outlying camps, the expenditures on air travel alone will not be covered, and assistance will have to be provided for equipment and food as well, in which case the project would appear to be an expensive means of increasing the productivity of so small a portion of the labour force. Unless the returns from fur sales justify the maintenance of these three families in their traditional subsistence economy, government support for developmental projects would be more profitably applied to increasing the earning capacities and incomes of the group as a whole, in a location in which both the costs of maintaining the community and developing income generating projects are minimized.

In summary, it appears that even though hunting, trapping, and fishing continue to contribute to the subsistence economy of the Eskimos, wage labour has become the preferred means of acquiring money, particularly at Spence Bay and Gjoa Haven. At Pelly Bay the amount of fur traded has been consistently low. Until recently, the amount of wage labour available in this settlement has been minimal and it is suggested that these people have been as traditional in their need orientation as the camp groups. The retail section of the co-operative only opened in 1967 and it is the first of its kind in the community. Prior to the opening of the store these people's requirements for money had been as low as that of the camp groups. The average game take of the Pelly Bay hunter appears to be midway between that of the hunters of Spence

and Gjoa. In comparison to the figures for the other settlements (Table 15) the averages for Pelly Bay might suggest that of all the variables that could affect harvesting patterns, in this community the absence of a local store might tend to reflect the emphasis between the amount of hunting that is done for domestic consumption and that which is done for trade. The 1966-67 hunting season is the first year for which sealskins have been traded in this settlement. This period coincides with the opening of the co-op retail store, and it might be interesting in the future to try and ascertain whether there is a significant relationship or not between this event and the natural resource harvesting activities of the community.

Studies are needed on the faunal resources of this region on which to evaluate the feasibility of raising economic levels through commercial harvesting methods. They would also provide the information necessary for means of improving the levels of domestic consumption through corporate harvesting such as co-op sponsored hunts or fishing projects where the produce could be sold locally through the co-operative store.

CHAPTER 4

SETTLEMENTS AND PERMANENT CAMPS

GENERAL CHARACTERISTICS OF THE SETTLEMENTS

PART 1

Introduction

Permanent camps are fast disappearing in this survey area. The only remaining area of concentration was at Thom Bay where, at the time of the survey, 10 families still resided on a more-or-less year-round basis.

The principal areas of population distribution in this region have been along the shoreline of the mainland from Perry River through the Adelaide Peninsula and up the west coast of Boothia to around Kent Bay. Groups have also migrated along the east coast of Somerset Island and Boothia from Cresswell Bay to the Simpson Peninsula. Other Eskimos have inhabited King William Island, and it is these people together with most of the families from the Adelaide Peninsula who have settled at the site at Gjoa Haven. Of the remaining mainland groups some have located at Perry River, others at Back River, and two families have settled with some permanency at a DEWline site.

The camps at Back River and Perry River are excluded from this report as time did not permit their inclusion in the schedule of field work, and due to the changes occurring in the other permanent camps, these will not be treated at any length but will be dealt with when pertinent to the subject matter under discussion.

For the purposes of the survey the population pyramids of the settlements are based on the R. C. M. P. official list of families. Changes have been made to exclude or include groups according to their location during the period that the survey covers.

Population of the Area

Rasmussen (1931) has presented a number of maps of the region showing the locations of camps, and has stated that the population at the time was, with the exception of Prince of Wales Island, fairly widely distributed throughout the area.

It would appear that these people were descendants of Eskimos who had migrated from the west and had inhabited the region after the departure of earlier groups of the Thule period.

The populations appear to have adapted residence patterns to the abundance and distribution of faunal resources with the result that, with few exceptions, seasonal variations in locale were a feature of their cyclical patterns of activities.

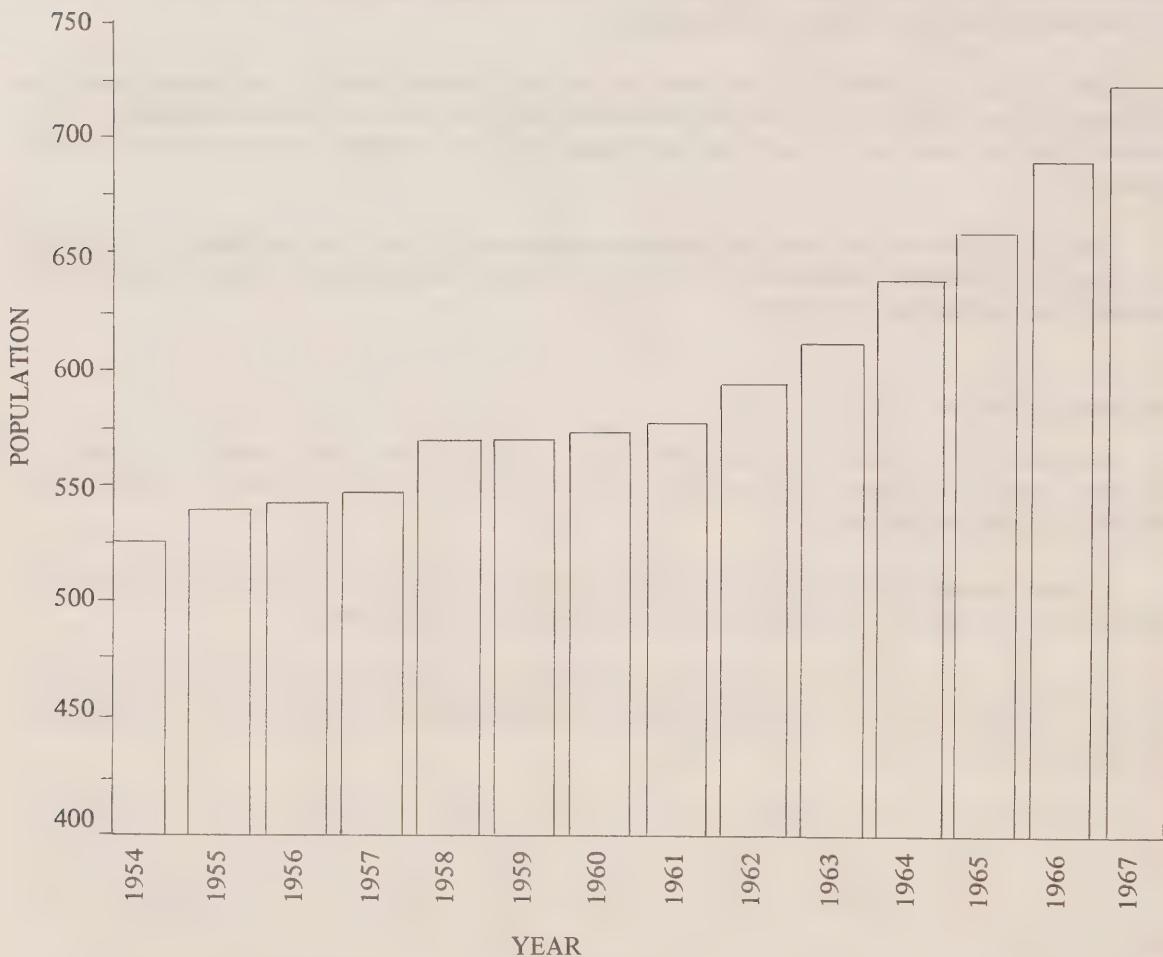
With the introduction of trading posts and missions, a nucleus of permanency was created around which groups tended to congregate with increasing frequency and for longer periods. The gradual development of settlements of increasing size and complexity offering a widening range of services have exerted an influence on residential patterns. These changes have combined with those occurring in the local economic processes that have passed from being hunting-fishing subsistence economies to being based on hunting-trapping-trading-wage economics. The availability of money in the form of wages and statutory allowances has influenced the choice of residence as the consumption patterns and needs of the Eskimos have changed. In the process, the camp structures have gradually disintegrated and permanent camps have substantially decreased in number.

Today the population is largely concentrated in three relatively small settlements at Gjoa Haven, Spence Bay, and Pelly Bay. They are separated from each other by approximately 100 miles of water and uninhabited terrain, and even with the present improved systems of transportation contact between the populations is infrequent.

The population census given by Rasmussen (1931) for this area indicates that there were 259 people inhabiting this region. He does, however, state that the figures are likely to be inaccurate due to omissions, and as they do not include the people living on King William Island this figure gives only a vague impression of what the total population might have been.

It is difficult to estimate previous populations for the present groupings in this area as D. B. S. census figures have included a number of groups under one heading. Moreover the groupings into which the areas were divided have not necessarily coincided with the residential orientation of the Eskimos. One illustration of this has occurred with the D. B. S. census done in 1961. This census, which was conducted in the summer, shows a small population at the settlement and a wide distribution of people at campsites. Due to the geographical location and often the temporary nature of some of these sites, not all camp residents have been included in the population figures of the areas in which they normally resided.

TABLE 17
POPULATION GROWTH SPENCE BAY AREA, 1954-1967*



* These figures include the groups at Pelly Bay, Gjoa Haven, Back River, and permanent camps throughout the area.

For the period previous to this, local R. C. M. P. and mission records differ according to the number of groups known. Up to 1953, listings of persons by the R. C. M. P. have varied as scattered populations have been contacted. The yearly variations in numbers have, until then, often been more representative of contact with an increasing number of previously unknown groups already resident in the area rather than of natural increases in known populations, or of migrations.

The following Table gives the rate of natural increase for the whole area. Included in these figures are the camp groups living on the Adelaide Peninsula, King William Island, Somerset Island, Boothia Peninsula and Back River as well as those of the three settlements.

TABLE 18

Birthrates, Deathrates and Natural Increase Spence Bay Area* 1954 – 1967

Period	Annual Average Birthrates	Annual Average Deathrates	Annual Average Natural Increase
1967	54.1	6.9	47.2
1966	64.1	11.6	52.5
1965	46.6	13.5	33.1
1964	74.0	28.3	45.7
1963	63.8	24.5	39.3
1962	53.7	26.8	26.9
1961	60.5	31.1	29.4
1960	72.0	56.2	15.8
1959	47.7	42.4	5.3
1958	62.1	56.8	5.3
1957	72.9	45.6	27.3
1956	56.9	49.6	7.3
1955	33.2	27.7	5.5
1954	41.6	17.0	24.6

* R.C.M.P. records at Spence Bay were used for compiling the table, and the figures given are based on per 1,000 population.

A comparison of the D. B. S. census figures for 1951 and 1961 would appear to indicate that there had been a regrouping of populations in the years between. The 1961 census indicates that out of a total population of 549 Eskimos 233 people were distributed among 15 camps. A population census of the Northwest Territories for 1966 shows that the Eskimo population had increased to 732, of whom 152 were living in camps. It is difficult to estimate what proportion of these were summer camps, and to which of the larger settlement groups the remainder belonged.

The major changes which appear to have occurred are that three large groups located on the Adelaide Peninsula at Fort Ross and at Lord Mayor Bay, consisting of 140 people, had evidently relocated elsewhere, and the population at Back River had decreased from 228 to 41. At the same time the populations of the groups at Gjoa Haven and Spence Bay had increased considerably.

Migrations in or out of the area appear to have been infrequent and on a relatively small scale. The most recent in-migration occurred in 1934 when the H. B. C. relocated 53 Eskimo people. This group was composed of four families each from Cape Dorset and Pond Inlet respectively and three from Pangnirtung. They were first located at Dundas Harbour on North Devon Island for two years, and then due to adverse ice conditions in that locality, were re-established at Arctic Bay. In 1937 three Dorset families were relocated at Fort Ross and the following year were joined by relatives from Cape Dorset. This group then comprised seven Cape Dorset families of an unknown number of people, and a group of western Arctic and Netsilingmiut Eskimos who had come east on the small vessel Aklavik, to rendezvous with the Nascoie at Fort Ross.*

In 1942 the Nascopie failed to reach Fort Ross because of ice conditions and the post was closed for two years. The severity of ice conditions in the summers of 1946 and 1947 again prevented the ship from reaching the post. Late in 1947 the post at Fort Ross was closed and another established at Spence Bay the following year. At this time a number of families of both the Cape Dorset and Netsilingmiut Eskimos relocated at the new site, and over the years others have moved south to join them. During this period a small number of people settled at Thom Bay and Lord Mayor Bay. In the summer of 1968 the former group constituted the only permanent camp of any size left in the area.

During the summer of the survey, including the Thom Bay group, there were 15 families living in permanent camps. The distribution of the camps as given below does no more than indicate the general area of residence within which the groups locate. The populations of these camps have varied in size as families have relocated at the settlements or moved out of the area and during the last two years the camps on the Boothia Peninsula and Somerset Island have undergone a considerable reduction in size.

In the spring of 1967 the camp at Creswell Bay was denuded of all but one family (10 people) when 19 persons relocated at Arctic Bay, and one family of four people moved to Thom Bay. The following table giving the location of camps and their populations was compiled during the summers of 1967 and 1968. The first of these was done after the group had moved to Arctic Bay and does not reflect this migration.

TABLE 19
Location and Population of Permanent Camps

Campsites	1967		1968	
	No. of Households	No. of People	No. of Households	No. of People
Agnew River	2	13	1	7
Cresswel Bay	2	13	1	10
Fort Ross	1	6	1	6
Thom Bay	10	52	10	44
Lady Franklin Point	2	9	2	9
Totals	17	93	15	76

* Personal communication from Ches. Russell who was in charge of this operation.

Two Thom Bay families relocated in Spence Bay and two others had, during the previous year, divided their periods of residence between the two. The death of Koovalah in the spring of 1968 deprived the people at Thom Bay of their camp boss, and by the end of August the whole group had expressed their intention of moving to Spence Bay.*

On King William Island the opening of the Canalaska trading post at Gjoa Haven in 1927 served as a focal point for the Eskimos on the island, the Adelaide Peninsula, Back River, and as far east as Lord Mayor Bay. Over the years, similar changes have occurred in this area as groups on the Adelaide Peninsula and King William Island have abandoned their traditional camp structure for the larger social grouping of a settlement. At present there are only two families who maintain a semi-permanent residence away from the settlement. These people live at a nearby DEWline site during the winter and make periodical trips to the settlement to trade furs. They spend the summer in the settlement and return by dog-team when the ice is safe to travel on.

A fair amount of interaction occurs between the Eskimos at Gjoa Haven and those at Back River. The latter come to the settlement to trade furs and buy provisions, and groups from Gjoa hunt on the mainland. Two families comprising eight people have moved to Gjoa Haven from Back River within the last two years.

A certain amount of geographical mobility is still occurring as small numbers of people move from one settlement to another. In the last two years one family from Cambridge Bay has settled at Gjoa Haven and another, consisting of two old people, has moved there from Perry River. With the closure of the H. B. C. post at Perry River in 1967 three other families relocated at Gjoa during the spring of 1968 and were unsure as to whether they intended to remain or not. Others from Perry River had gone to Cambridge Bay. Two families had moved from Gjoa to Spence Bay early in 1967, and another that had gone out to Roma Junction in Alberta in the spring of that year had not returned to Gjoa by the time that survey was completed in the fall of 1968.

It has been indicated in this section that a considerable amount of geographical mobility has occurred in this area in the last 30 years. It seems reasonable to expect that this will continue until all the permanent camps have disappeared and the immigrants have established themselves in communities that will meet their changing needs.

Social Organization

The major social variations in these settlements are those that occur between the whites and the Eskimos, and the distinctions between the groups are closely correlated to occupations. One unusual feature of the region is that the area administrator for the D. I. A. N. D. is an Eskimo from the Western Arctic. As he is a resident of this community, on the same terms of impermanence as the white population, he will be classified with this group.

Due to the transient nature of their tenure in the community and the fact that occupationally they are removed from the economic processes of the settlement, the white residents of the communities will be excluded from the discussions in this report. The range of official duties and responsibilities of non-Eskimos are defined by the positions they fill. As the range of variation within these limits is determined by the personalities of the individuals concerned, and that of the incumbents of other positions, only very brief descriptions will be given of the roles these people play in a community.

In the camp structure of the pre-contact Eskimo society, social structure was based on the interdependence of family members and of family groups. These relationships were maintained through a system of leadership whereby an individual's position was established by his prowess as a hunter, shaman or both. Social changes have occurred as larger, more permanent, residential groups have formed and escalating government involvement in these communities has introduced an increasing number of services. Of necessity these changes have required that the decision-making processes were located in the agencies responsible for providing the services, and through them to their local representatives. Lacking the educational qualifications and experience that were required for these positions the Eskimos were unable to qualify for them, and the locus of authority and decision making had to be vested in an imported population.

Over the years, the attitude of government agencies to community development has progressively become less paternalistic and more oriented to encouraging the involvement and participation of the Eskimos in community affairs. In adapting to a more urban type of life in a settlement, the camp groups have had to make many social adjustments. The most important of these have affected the power structure and interdependence of family groups. Where the dependence for survival was once placed on camp leaders it is now transferred to various agencies who have, by their specialization and presence, lowered anxiety levels. At present however, locally elected councils, committees and management bodies of co-operatives composed of predominantly or entirely Eskimo membership now exert a profound influence on the communities. Where once the direction of group activities was the responsibility of a very small number of people, the present proliferation of decision-making agencies are the result of a rising level of participation of the Eskimos in the developmental processes of their communities and their future.

Not only has there been an increase in the number and type of decisions to be made on behalf of a group, but with the changes occurring, the decision-making authority structure is being further fragmented and areas of responsibility circumscribed. This is inducing changes in the range of overt individual power/authority relationships, and is inclined to be frustrating for a people unaccustomed to this form of group decision making.

The need for community leaders who were able to communicate with both the Eskimos and non-Eskimo has helped to shift the locus of authority to a generation of younger people who have more rapidly become bilingual. The ability of these people to communicate in both languages has also been instrumental in their being able to obtain wage employment with the non-Eskimo agencies. The increasing dependency of the Eskimos on a money economy has reinforced the position of the permanently employed, and placed them in a high achievement relationship to their confreres.

The changes in the economic base of the Eskimo economy, and the authority/power relationships that have occurred on an individual and group basis, are at present a source of confusion to a people more accustomed to a simpler more precise leadership pattern. Even though it would appear that the interdependence of families has lessened and that the older generation of leaders have inadvertently been divested of much of their authority, it must be remembered that with so little wage employment available in a community, interdependence has to some extent become based on the procurability of money as opposed to faunal resources, and the older generation of leaders are still a potent locus of covert authority by virtue of their relationship to the present leaders, and by being the exponents of the traditional shamanistic practices.

Economic and social changes that have occurred would appear to indicate that a return to the camp structure of Eskimo society would be an ideal for only a small proportion of the population, and that a greater exposure to western society is inescapable. The problems associated with adjustment to settlement life will have to be dealt with by increasing levels of education, wage employment and recreational facilities until the communities have achieved a high level of economic and social autonomy.

Community Services

It has been previously indicated that the growth of the settlements as major population centres has been a gradual process. Only within the last two to three decades have permanent camps disappeared, or their populations markedly decreased, as groups have settled with some permanency around trading posts and missions.

Until 1968, in the absence of local agencies capable of providing community services and utilities, the escalating involvement of the Federal Government in the development of these communities has required the assumption of the responsibility for providing both.

Communications have been extended and improved by widening the radio-telephone network, building airstrips, and the negotiation of contracts for scheduled air transportation, and mail services.

Health facilities have been provided by the Department of National Health and Welfare who operate a nursing station at Spence Bay and have trained lay dispensers at Thom Bay, Gjoa Haven, and Pelly Bay.

Educational facilities have been provided at all three of the settlements where schools of one or more classrooms have been built and staffed.

Law enforcement in the area has been the responsibility of the R. C. M. P., who have maintained a detachment at Spence Bay since 1949; D. I. A. N. D. has had an area administrator resident in this settlement since 1962.

Electricity and heating, water delivery, and garbage and sewage disposal have been provided to all government buildings, and extended to include Eskimo residences as these have increased in number.

As permanent low-cost housing for the Eskimos was not commenced until the early 1960's road construction in the settlements has been minimal. It seems likely that as permanent residential areas increase in size, road systems will be extended and improved.



PLATE III - Remains of a winter sod-house at Creswell Bay



PLATE IV - Nursing and administration services at an outlying camp

Agencies in the private sector providing services in these communities are the Hudson's Bay Company, the Eskimo co-operatives and the missions. The H. B. C. has retail stores at Gjoa Haven and Spence Bay, while the Koomiut Co-operative at Pelly Bay operates the retail outlet for the settlement. Both the co-operatives also undertake the local contract and services and at present hold contracts for oil and water delivery and garbage collection.

Community Clubs and Religious Organizations

The number of community clubs and associations differ in each settlement. At Gjoa Haven and Pelly Bay the locally-elected executives of all these agencies are composed entirely of Eskimos, with the non-Eskimo population acting as resource personnel.

The Catholic mission at Pelly Bay is the only religious institution in the community. All other settlements (including Thom Bay) have both Anglican and Catholic missions. The Anglican minister at Gjoa Haven is one of a small number of ordained Eskimo Anglican ministers, and his wife is the current president of the Ladies Auxiliary of the Northwest Territories.

PART 2

SPENCE BAY AND CAMPS

Introduction

The history of exploration in this area is well documented and references to this have been included in the bibliography. The search for the Northwest Passage, and the several searches for the Franklin Expedition, brought the Eskimo population into contact with European people from the early nineteenth century.

The indigenous people tended to cover the region in scattered camps, but were drawn to the area of Lord Mayor Bay (particularly Netsikslavik Inlet) because of the abundance of caribou and seal, and the good fishing in Netsilik Lake. Even today, these two areas are the sites of the largest concentration of summer and fall camps.

In 1948 the first permanent buildings in the area were erected by the Hudson's Bay Company, and since that time the Eskimo people have gradually settled around this complex. With the construction of missions, buildings for government agencies, and housing for the Eskimos the community has passed from being a temporary encampment to a more permanent settlement providing a relatively wide range of services and facilities for the local people.

Location and Site

Spence Bay (situated on the west coast of the Boothia Isthmus) is entered between Cape Farrar and another unnamed point of land. The Bay, with an average width of five miles, tends eastward for approximately seven miles before turning in a northeasterly direction for a further 11 miles to its head. The settlement is situated in a narrow inlet which projects northeastward from the head of Spence Bay. The western side of the inlet consists of cliffs, rising to about 75 feet near the entrance which give way to more gently rising rocky slopes toward its head. The eastern side of the inlet is generally rocky, with cliffs rising to about 45 feet. The inlet is approximately half a mile long with an average width of 900 yards.

The H. B. C. complex, situated on a ridge between the head of the inlet and a lake, forms the eastern limit of the community. From here the settlement tends in a southwesterly direction following the shore of the inlet. The water forms its southern boundary, while hills to the north and west and the lake to the east complete the ring of natural barriers surrounding it. The southwest corner of the settlement is separated from the remainder by a wide gully running north and south which is particularly wet and swampy in spring. These geographical features indicate that difficulties will occur in attempts at expansion past the existing site-plan given in Figure 23.

The largest of the remaining permanent camps in the area is situated at the head of Thom Bay. The Bay is entered between Cape Margaret and Cape North Hendon approximately 12 miles to the southwest. It extends westward for about 14 miles narrowing to a width of about seven miles at its head, where it is entered by the Ikpik River.

The camp site most frequently used by the Eskimos extends along the beach from the Anglican church at the mouth of the Ikpik River to the Catholic mission, about 1 1/2 miles to the northeast. Both missions have erected a small church, and the Catholic mission has partitioned off a portion that serves as living quarters and dispensary. One small stone building is the only other permanent structure in the community.

As stated previously, the locations of the campsites at Agnew River, Fort Ross, and Creswell Bay are indicative of only a general area within which the groups locate. On the abandoned H. B. C. site at Fort Ross, two buildings remain and these are the only permanent structures north of Thom Bay.

Transportation

This subject has been dealt with more extensively earlier in the report, and is summarized below.

Spence Bay is serviced by aircraft and sea-lift. The marine supply lines originate in Hay River where cargo is consigned to the Northern Transportation Company Limited, barged down the Mackenzie and loaded on to a ship for Spence Bay. This cargo reaches the settlements about mid-September.

Air charter transportation to the settlement originates at either Inuvik, Churchill, Yellowknife or Cambridge Bay. The most frequently used route is via a weekly scheduled air service from Cambridge Bay, provided by Northward Aviation Limited. This flight takes place on a Monday, and unless the aircraft is chartered for trips to Thom Bay and Pelly Bay, it returns to Cambridge Bay the same day by way of Gjoa Haven.

In the last three to four years Pacific Western Airlines Limited have flown air lifts out of Yellowknife to the northern settlements using Hercules Aircraft. These flights occur in the spring when sea ice has reached its maximum thickness and the number of flights to a settlement depends on the amount of freight to be transported.

Travel routes between the settlements and the permanent camps are either over land, by sea ice, or by chartered aircraft. Dog-teams are still used for winter travel, but ski-does are rapidly gaining in popularity. Summer travel is by canoe or boat. Due to the high cost of air travel, this means of transportation is chiefly used by people travelling under the aegis of one of the local agencies. As stated previously, charter flights for 1967 numbered 54 to Pelly Bay, 19 to Thom Bay, and 10 to outlying camps. These flights were made by D. I. A. N. D. or D. N. H. W. for administrative or medical purposes.

Communication Systems

Apart from the mail service the communication system at Spence Bay and Thom Bay is by means of radio-telephone networks. The four agencies having radio-telephone sets in Spence Bay are the C. N. T., R. C. M. P., the Catholic mission, and H. B. C. Only the first of these circuits is available for the use of the public.

At Thom Bay, D. I. A. N. D. pays for the usage of a C. N. T. battery-operated set. This circuit is used primarily by the lay dispenser for contacting the nurse at Spence Bay, and the equipment is housed in the dispensary/residence of the catholic mission.

Utilities

As no "utilidor" system exists in the settlement, such services as water and sewage disposal are available only by haulage. Another public service included in this section is the delivery of fuel oil.

At Thom Bay there are no community utility services. Individuals haul ice or water from the river as and when required. Garbage and effluent are dumped on the nearby sea ice in winter or a short distance inland from the dwellings. Fuel is purchased at the H. B. C. store at Spence Bay and transported back to the camp by whatever means of transportation is being used.

Water

The community water supply originates in the lake just behind the H. B. C. As the lake is deep enough not to freeze to the bottom, it is possible to keep a hole open through the ice and pump water.

The nursing station is equipped with a small pump housed in a shed on the edge of the lake, and a storage pressure tank in the building which is filled whenever necessary. Water for the other government establishments is pumped into a 500-gallon tank mounted on a farm-type trailer that is drawn by tractor to the various points. Water is then fed by hose into pressure tanks in the buildings.

During the summer and fall, water is available to the Eskimos from the delivery cart, but must be removed by them in buckets. In the winter, they obtain water by melting ice-blocks which are periodically cut and piled on the surface of the lake ice. When required, blocks are hauled to the houses of the aged and widowed, the rest of the Eskimo population use dog-team to transport the blocks to their residences.

Sewage and Garbage Disposal

The nursing station at Spence Bay is the only building with a modified "utilidor" system. Effluent drains into a 1,000-gallon tank in the basement and is pumped out into the bay after a period of bacterial activation.

Effluent from the other buildings equipped with septic tanks is pumped into a transportation system similar to that used for the delivery of water, and disposed away from the settlement.

Other than the nursing station, all government housing is equipped with chemical toilets — a pail within an enclosure. Plastic bags are used as liners to the inner pail, and when nearly full are tied and placed in the open 45-gallon drums provided for each house.

In the absence of plastic bags, effluent is dumped into the open drums.

During the bi-weekly garbage collection, these drums are removed and emptied in a dumping area. When sea ice conditions permit, the refuse is dumped on the ice beyond the entrance of the bay. In the summer a dump area about 2.3 miles from the settlement is used. While the practice of dumping on the sea ice has some pragmatic value, the rationale that the refuse will be carried out to sea or disappear through the ice during break-up is not substantiated by the facts. During break-up, shore ice breaks off and forms into patches of drifting ice that are moved by winds and currents. The winter dumping area is subject to this process and the refuse gets carried into the bay. The plastic bags that have been tightly tied and remained unbroken will also float back into the bay and have to be towed out before being punctured. Pollution of the shoreline results. The present winter garbage disposal system is unsatisfactory and needs to be reviewed.

Heating

These northern communities are rapidly becoming comparatively large consumers of petroleum products, particularly heating fuel. The D. I. A. N. D. distributes this product to the other government agencies, and to the Eskimos. The missions and H. B. C. import supplies for their own requirements.

Prior to the construction in 1967 of three bulk-storage tanks, with a total capacity of 200,000 gallons, supplies were brought in by sea lift during the summer in 45-gallon drums. Fuel oil is now transported more economically in bulk and pumped from the ship to the storage tanks.

Delivery to offices and dwellings is made by means of pumping from a 500-gallon tank mounted on a tractor-drawn trailer. The newer Eskimo houses have 100-gallon tanks mounted on wooden tressels adjoining the building. The older homes are supplied with 45-gallon drums from which oil is drawn to fill the smaller container attached to the stove. Refueling of the storage equipment is carried out during the fuel delivery to the government buildings.

It has been indicated in the section dealing with climate in this region that there is not one month in the year in which heating is not required. The present annual quotas of fuel oil for Eskimo housing are as follows.

House type	Imperial gallons per year
1 room	1,080
1 bedroom	1,170
2 & 3 bedroom	1,305
3 bedroom	1,350

Inclusive of government buildings, the total fuel consumption for this settlement in 1967-68 was 120,245 gallons. In the summer of 1968 the bulk oil off-loaded at Spence Bay was 189,000 gallons, and the estimated requirement for 1969-70 was 199,000 gallons. The large increase in the 1968 shipment over that of the previous year represents the anticipated consumption of the 18 new Eskimo houses to be built during 1968-69. As heating fuel is included in the rental structure for these houses, the H. B. C. handles the fuel oil sales to camp dwellers who are not included in the low-rental housing scheme while they remain in camps. Fuel oil for the churches at Thom Bay is hauled there by the respective missionaries using whatever mode of transportation is available.

At an estimated cost of on site bulk oil delivery at 66.2c per gallon, the approximate yearly expenditures on this commodity are around \$80,000 for 1966-67, \$125,500 for 1967-68, and \$132,000 for 1969-70.

Health

The Department of National Health and Welfare had the responsibility for providing health services in these remote areas, and accomplished this through establishing a system of nursing stations or health centres which were extensions of the medical services of a hospital. A more recent implementation of medical services has occurred through the training and employment of Eskimos as Lay Dispensers in the smaller communities.

The nursing station at Spence Bay was erected in 1962, and is the only medical installation in the survey area. Local Eskimos trained as Lay Dispensers administer to the health needs of the communities at Gjoa Haven, Pelly Bay, and Thom Bay. The Spence Bay nursing station is divided into two sections. One portion is used as a dispensary/treatment/in-patient area, and the other portion provides living quarters for the nurses. The station is well equipped with x-ray, oxygen, resuscitative facilities, dental equipment, and refrigeration for drugs and vaccines. Four beds and three basinettes are available for in-patients.

The staff consists of two registered nurses, supplemented by an Eskimo community health worker, and two Eskimos to handle the general duties of the establishment. Most of the time there are two nurses in residence, but occasions occur when only one nurse is present. At these times the incumbent is faced with an exhausting regime of being continuously on call until the situation is rectified. The workload placed upon the nurses at this station is a formidable one. Not only are they responsible for the health of the settlement at Spence Bay, but also for the groups at Thom Bay and Pelly Bay. Both communities have radio-telephone linkage with Spence Bay, and are in frequent contact with the staff there on health problems. At the discretion of the nurses, an aircraft can be chartered to bring in patients from these settlements or from outlying camps. Expenditures by the Department of National Health and Welfare on transportation during the year 1967 amounted to approximately \$39,000. The figure includes the removal of patients to medical centres, nurses' flights to communities to hold clinics, and tours of the area by medical personnel. The cost of returning patients to their home communities is borne by the D. I. A. N. D.

TABLE 20
SPENCE BAY NURSING STATION
CLINICAL ACTIVITY, 1967

Item	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
Patients treated	154	217	306	151	103	301	261	239	223	134	577	265	2,931
Admissions to N.S.	5	8	—	1	1	16	1	4	1	3	8	4	52
Births at N.S.	1	2	—	1	1	1	1	1	—	1	2	1	12
Evacuations to hospital	1	1	—	3	3	7	4	6	1	5	8	4	43
Health Education meetings & classes	14	12	17	15	1	1	4	6	8	10	10	8	106
Attendance	386	268	486	283	31	90	82	32	64	99	236	82	2,139
Visits to schools	6	—	7	7	1	3	—	—	14	10	17	12	77
Home visits – public health, treatment or follow-up	17	42	16	1	25	139	104	60	82	57	66	87	696
Total persons helped at home	69	106	53	5	25	384	199	22	53	42	170	79	1,207
Immunizations	35	30	155	18	7	96	—	144	61	58	194	76	864
Nursing Staff Hours													
Hours Nursing	108	82	105	—	83	224	156	385	68	321	282	260	2,074
Hours travelling	—	—	—	—	2	26	36	51	75	38	41	62	331
Hours doing office work	94	92	80	—	21	105	111	148	130	196	110	112	1,199

Source D.N.H. & W.

During the periods of break-up and freeze-up, when aircraft are unable to land on the ice, problems occur regarding patient evacuation from locations where there are no land-based landing strips. Thom Bay and the outlying permanent camps were the only population concentrations that posed this problem. With the relocation of the Thom Bay group at Spence, part of the problem has been eliminated. The relocation of this group has also eliminated the need for the monthly clinics that the nurses from Spence held in this community. But until Pelly Bay is provided with a nursing station the clinics held there will continue.

The medical services rendered by the nurses at Spence Bay reach far beyond the confines of the community, and frequently include the settlement at Gjoa Haven. While the Lay Dispenser at Gjoa Haven contacts the hospital at Cambridge Bay for assistance or in emergencies, if the aircraft flying the mail is in the vicinity of Spence Bay, the nursing station there will be contacted by the doctor at Cambridge Bay. One of the nurses will then go to Gjoa Haven to render emergency treatment and accompany the patient into Cambridge Bay.

Some idea of the workload of the nurses can be obtained from Table 20, which gives the clinical activity of this unit. The figures in this Table do not appear to include the patients treated by the nurse when at Pelly Bay and Thom Bay, and when it is realized that only one nurse staffed this nursing station for a number of months, the magnitude of the workload becomes more apparent.

TABLE 21
CLINICAL ATTENDANCE, CASES AND CAUSE, 1967

	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Common Cold and Influenza	12	84	4	14	9	95	49	63	57	51	53	61	552
Bronchitis and Other Resp. Dis.		12	1	2	15	32	35	17	26	19	53	30	242
Gastrointestinal Conditions	5		4	7	3	18	23	20	19	11	14	17	141
Malnutrition, Anaemia, Underweight	—	—	—	—	—	12	13	7	9	9	5	2	57
Breast Conditions	—	—	2	—	—	—	1	1	—	—	1	2	7
Gynaecological Conditions	1	—	—	—	—	3	4	14	5	2	2	—	31
Prematurity	1	—	—	1	1	3	14	—	1	—	—	—	21
Other Complic. of Pregnancy	—	—	—	—	1	2	—	—	—	—	—	—	3
Fractures, Dislocations	—	—	—	—	3	1	—	—	—	—	—	—	4
Cuts, Bruises, Sprains	3	7	4	4	4	27	8	30	23	31	18	20	179
Other Accidents – (Inc. Burns)	3	3	2	—	6	4	1	—	4	7	14	5	49
Orthopedic Cond. – (Excl. Acc.)	—	—	1	—	2	2	1	—	—	—	2	—	8
Refractive Errors	—	—	—	—	8	2	—	—	—	—	4	—	14
Other Eye Conditions	3	5	2	3	3	30	7	14	23	36	21	23	170
Ear, Nose, Throat Conditions	4	10	17	6	25	64	19	21	36	38	51	68	359
Skin Conditions	2	—	1	2	2	16	8	19	21	25	14	24	134
Infestations	—	2	1	—	—	9	5	—	1	—	7	2	27
Dental Conditions	2	—	—	1	1	11	3	9	6	11	14	2	60
Conditions of the Nervous System	—	—	—	1	1	5	7	—	—	9	2	—	25
Arthritis and Rheumatism	—	2	—	—	—	14	16	11	13	3	7	7	73
Cardiovascular Conditions	—	—	1	—	—	—	4	—	—	—	—	—	5
All Other	2	—	—	3	—	42	—	—	—	—	—	—	47

The broad range of general nursing duties (apart from those associated with providing medical services to other settlements) can be roughly grouped into three categories. Out-patient care, which includes general nursing care and treatment of patients during the daily clinics, or on an out-patient basis at other times. Apart from the people requiring treatment (including minor surgery and dental extractions) this category covers those people who attend for tuberculosis follow-up services, such as x-ray or blood work, fitting glasses, and an assortment of non-treatment purposes. The latter, as a rule, constitute a fairly large annual population and are not classified as patients. The next category is in-patient care, which covers maternity patients, and those cases requiring more intensive treatment who are admitted to the nursing station for a period of 24 hours or more. Included in this category, but not recorded as admissions, are people in transit to or from hospital from other communities for whom accommodation is unavailable in the settlement. The third category of public health services encompasses such activities as pre-and post-natal classes, school clinics and classes, home visits, and meetings which are a combination of well baby clinics, and teaching in preventative medicine.

According to Table 21, which shows the incidence and cause of clinical attendance, the common cold, influenza, upper respiratory tract infections, and ear, nose, and throat conditions account for the largest proportion of clinical activity. This is a deceptively unimpressive array of relatively minor illness until it is realized that the populations of these isolated communities have had less exposure to viral infection, and with their low resistance to these agents the people in the northern settlements are very vulnerable. The high incidence of past tubercular infections, and the chronic chest conditions to which these populations are prone, increase their susceptibility to develop severe respiratory infections from colds and influenza. With children, extensive ear and throat involvement also result. In these isolated communities, the proportion of adults and children who become seriously ill as a result of the common cold and influenza is probably considerably higher than that of the larger populations of the south, and they are the major element in admissions to the nursing station for intensive care. The 0-5 and 50+ age-groups appear to be most susceptible to, and affected by, these two types of infections.

Local medical services are implemented by the nurses being able to obtain advice by radio-telephone from the doctor at Cambridge Bay, and when other D. N. H. W. medical specialists visit the settlements to advise and assist the local staff. There is an annual tour by a medical group consisting of doctor, dentist, and x-ray technicians who travel to all of the settlements and outlying camps. On this occasion almost every Eskimo in the area is given a medical examination and x-ray. Cases requiring evacuation are brought back on the aircraft with the medical personnel and transferred to hospitals in the south. Active tuberculosis is the most frequent cause for evacuation. In the E4 Health District, in which the survey area is located, seven new cases and one reactivated case of tuberculosis were diagnosed in 1967. How this compares with previous years is not known, but the incidence of tuberculosis in the Arctic has steadily declined.

Within the next two years, nursing stations are to be built at Pelly Bay and Gjoa Haven. If the costs of these buildings and the average yearly operating costs of the units are based on the replacement cost of the station at Spence Bay the initial expenditure is going to be at a minimum \$400,000 for the building, approximately \$11,000 for equipment plus a yearly operating cost (exclusive of salaries) of \$11,000 per unit. The provision of nursing stations in these settlements will not only ease the present work load of the nursing stations in these settlements will not only ease the present work load of the nurses at Spence Bay but be of immeasurable value to the communities.

Law Enforcement

The Royal Canadian Mounted Police have had a detachment at Spence Bay since 1949. The staff consists of two officers and one Eskimo special constable. Until 1959 the detachment was located on a point of the western arm of the bay, at some distance from the present settlement. In that year the buildings were moved to the present site on the southern rim of the settlement overlooking the bay, and in 1966-67 an administration building and three houses were erected.

The three settlements in the area, and the outlying camps, are all under the jurisdiction of the Spence Bay detachment. The distances to be travelled by the police officers vary with the number and location of

camps, and regular patrols using dog-teams or canoes were a part of their activities. Even though the detachment still maintains a kennel of 22 dogs they are rarely used except for local ground searches for persons overdue from hunting expeditions. An Otter aircraft of the Air Division is available if needed, but journeys to the settlements or camps are made on the scheduled air service or by charter of aircraft.

Prior to the installation of administrative and medical personnel, the detachment officers were responsible for providing these services in addition to their other duties. At present their prime responsibility is law enforcement, the registration of vital statistics and the maintenance of directories of the Eskimo population. They also serve as game wardens and are responsible for the issuing of general hunting licences, fur export licences and fur tags for animals on which a quota of kills has been set. Inoculations against rabies for dogs are given by the officers who are also responsible for ensuring that dogs are kept under control in the settlements.

Lawlessness is not a problem in this area, and at the time of the survey the detachment was not even equipped with a jail. The nearest Justice of the Peace is located at Cambridge Bay, and in the event of criminal activity the case would be heard in this court. In the event of the accused being convicted, requiring long term incarceration, he would be removed to the correctional institution at Yellowknife.

Religion

Both Anglican and Catholic denominations have erected churches and residences. The first Catholic mission buildings were built in 1950. Five years later the Anglican church was built, and moved to its present site in 1962. Both denominations have built churches at Thom Bay, and as stated earlier, these are the only permanent buildings at this site. The large proportion of the Eskimos at Spence Bay are Anglicans and at Thom Bay only one family is Catholic.

Both missionaries make frequent journeys to Thom Bay by dogsled or ski-doo during the winter, and periodically to the more remote camps.

Catechists in both settlements carry on the work of the church while the minister is absent.

The Anglican church has an active and well attended Women's Auxiliary at Spence Bay which has done a great deal to beautify the interior of the church. This organization also undertakes the interior decorating of the church for solemn or festive occasions.

Both ministers are active participants in the affairs of the community and are often elected to committees. These activities are, however, limited to some extent by their having to administer to the camps and the group at Thom Bay.

Education

At all three of the settlements there are schools of one classroom or more. Grades 1-6 are taught at the local schools, after which pupils go to the residential schools at Inuvik or Yellowknife.

Children from the permanent camps, and those going to school from the settlements, are picked up during the last few days of August by an air lift arranged by the Department of Education. On completion of the school year pupils are returned to their families a similar procedure.

Problems have occurred in the past when returning students to camps where the aircraft has had to land on the sea ice. If, as has occurred, break-up has started earlier than is normal, the sea ice becomes unsafe for landing and the children for the camps have had to hold over at the nearest settlement for three to four weeks. Their late return gives them less time with their families and the whole procedure becomes an unhappy experience for all concerned. A similar situation is likely to occur when pupils are due to return to school if freeze-up starts earlier than usual. The early formation of ice may be of sufficient depth to prevent an aircraft from landing on floats, and not thick enough to support an aircraft on skis, with the

result that children at these camps either miss a month or more of school or the whole year. Communication between the Department of Education and area administrators on local ice conditions might help to avoid both situations by returning or picking up children from camps a little ahead of the scheduled air lift.

Suggestions have been made in other reports on this area in regard to providing hostels at the settlement to house the children from the camps. With only three small permanent camps left in the Spence Bay area there is no longer a need for hostels of this type.

A wide range of vocational courses are available to the Eskimos through the Education Branch of the D. I. A. N. D., and even though the training facilities are continually being expanded to meet the increasing demands for this service, the amount of participation in these courses by the people in this area has been low.

Apart from Spence Bay, formal education in a southern type of curriculum has only recently been introduced into the settlements, and the potential ability of the young Eskimos to meet the minimal education requirements of most of these courses has not, as yet, had time to develop. As levels of education improve, it is likely there will be a steady increase in the number of young people desiring, and able to participate, in vocational training courses. Unless job diversification and employment opportunities increase in their home communities, these young people are going to be faced with the choice of returning home and not being able to utilize their newly acquired skills, or of immigrating to centres in order to find work.

At Spence Bay a two room school and teacherage were erected by D. I. A. N. D. in 1958. In 1964 another classroom was constructed and a "512" house provided for the additional staff. The school was re-structured in 1967 to include kitchen facilities and hallways connecting the buildings together into one complex. At the same time a two bedroom house was built for the teaching staff. The original costs, plus renovations, and additions to the school amount to nearly \$96,700. The replacement value of this building would be well in excess of this amount.

From the table of student attendance for the year 1967-68, given in the Appendices, it can be seen that the average attendance figures are relatively high. In the order of magnitude, the reasons for absenteeism were for illnesses requiring hospitalization, less severe illnesses, out fishing/hunting with parents, or accompanying parents to another settlement.

Teachers remarks in the rosters stated that absenteeism occurring during the first week of school were due to parents not returning from summer fishing camps in time for the children to start school. The incidences of absenteeism increase during May and June, which is a period of progressively warmer weather and when there is an increase in the sealing and fishing activities of the Eskimos. Judging from the comments in the rosters, the absences of pupils during this period are for a day or two at a time, which would suggest the hunting/fishing trips are of short duration. The high rate of pupil attendance would appear to suggest that family groups no longer go out to a winter camp for the trapping season.

The population of the settlement, and the camps, indicates there are 80 children in the age group 6-15. Of these, 56 are in attendance at the local school, 15 go to residential school, and 9 are either school dropouts or have married. The number of children in the 0.5 age group is 79. If the classroom capacity is estimated to be 30 pupils, an additional classroom is going to be required in the next four to five years.

To date, only a small proportion of the adult population of Spence Bay and the surrounding camps have attended vocational training courses. The Lay Dispenser at Thom Bay, the teaching assistant, and community health worker at Spence Bay are the only three people to have participated in courses, and are employed in these capacities.

An appraisal of the education levels and linguistic fluency in English was attempted during the survey to cover as large a portion of the adults over 16 as possible. The definitions used to categorize oral ability were "English OK, some, or none" designed to cover 'relatively high fluency and good comprehension', to

"limited fluency and comprehension" and none of either. Included in the latter category were those people whose comprehension of the language was so low it required an interpreter to communicate.

Even with the looseness of these definitions it was clear that the oral ability of the group was low. The following summary gives the breakdown of these categories and whether the people interviewed had attended school or not. The 65 men and 54 women represent approximately 68 and 66 per cent of the men and women over the age of 16, as shown in the following tabulation:

Linguistic Ability and Comprehension of English

	Men	Women
Sample	65	54
High	20	7
Low	10	4
None	35	43

Years of Schooling

Years	Men	Women
1	3	
2	2	
3	2	2
4	2	1
5	8	3
6	1	2
7	1	1
8		1
No schooling	46	44

The higher incidence of the number of men speaking the language is perhaps due to a number of factors. One of the most important is that a number of respondents stated they had learned the language during a lengthy period in hospital. Some of the men had also acquired their proficiency during their periods of employment away from the settlement.

Of the group interviewed at Thom Bay, 13 were men and eight were women. Two men and one woman were fluent in English, and three men were less so. Eight men and seven women appeared neither to speak nor understand the language.

The summary below is a follow-up of forty young adults, between the ages of 16 and 25 years, who had received some degree of education. The inventory was done in conjunction with the Education Branch of the D. I. A. N. D. at Fort Smith, in order to ascertain their present status in regard to wage employment. The families of three of this group had moved out of the settlement. They have been excluded from the figures below as it was not possible to ascertain whether they were employed or not.

Single		Married		Single		Married	
Permanently Employed	Female	Permanently Employed	Male	Casual Labour or Unemployed	Male	Casual Labour or Unemployed	Female
Male	Female	Male	Female	Male	Female	Male	Female
2	6	-	1	16	7	2	3

Nine of these 37 people found permanent wage employment, of these one single man, two single women, and one married woman found jobs at Cambridge Bay, Inuvik, and Ottawa. Nine of the single unemployed men had worked for a period during the year at Roma Junction for the Great Slave Lake Railway. Of the women who had married and remained unemployed, one had settled in Edmonton with her husband.

Administration

Until the summer of 1968 the administration of the settlement and the area was the responsibility of the D. I. A. N. D. After this date the Government of the Northwest Territories assumed responsibility.

During the period of administration by the D. I. A. N. D. there was an Area Administrator, appointed by the Department, resident in the community from 1962 onward. His duties were to carry out administrative policy and generally assure the functioning of the communities and the welfare of the residents. At Pelly Bay and Gjoa Haven, these duties were performed by the school principals who functioned as assistant Area Administrators. During their absence in the summer the administrator from Spence Bay assumes direct responsibility for these settlements in addition to those for Spence Bay, Thom Bay, and the camps.

Health and judicial responsibilities are excluded from the range of duties that the Area Administrator is expected to perform. In general, he assumes responsibility for all government property, issues welfare vouchers to needy families, ensures the maintenance of community services, and initiates community projects with the co-operation of the Eskimos. The preparation of annual estimates for capital equipment and operating expenses for the settlements, the submission of reports on settlement activity, and the supervision of rent collection and housing management by the local housing association are all a part of the duties of this officer. He is assisted in community development measures by an advisory committee composed of both Eskimo and white residents, and is expected to take an active interest in other local committees.

The chain of responsibility extended from the Area Administrator to the Regional Administrator at Yellowknife, and from him to the Administrator of the Mackenzie, who in turn was responsible to the Director in Ottawa. Some modification will undoubtedly occur as the Territorial Government at Yellowknife assumes a greater range of the governmental processes of the Territories.

The present administrative offices are located in the centre of the settlement. The building was erected in 1966 and is divided into two sections, one of which forms the office complex and the other is equipped as a two-room transient centre for the use of government personnel or patients enroute to their homes from hospital. The first officer to serve as Administrator of the settlement was appointed in 1962. The administrative staff in 1968 consisted of the Administrator and a full-time assistant, who acted as interpreter-clerk-typist and performed a variety of duties to assist in the general management of the settlement. Periodically the assistance of a part-time clerk-typist is required and the job is filled from the qualified local personnel.

Equipment and Maintenance

Apart from the ski-doo provided for the nursing station by D. N. H. W., and ski-doos owned by the Eskimos, all vehicular equipment in the settlement is the property of D. I. A. N. D. and operated by the local Eskimos. For the last two years the heavy machinery at Pelly Bay has been used for road and airstrip construction at both Pelly and Spence. As these machines are not part of the permanent equipment of

either community, for the purpose of this report they will be excluded from the vehicle inventory given below.

TABLE 22
Equipment Inventory
Spence Bay 1968

Agency		Approximate Value*	(dollars)	
Government				
D.I.A.N.D.	1 snowmobile	5,500		
	2 crawler tractors	30,000		
	1 farm trailer with 1,000 gal. tank	2,900		
	3 pumps	1,250		
	2 stone boats	600		
	1 trap boat with inboard engine	4,500		
	1 canoe and outboard motor	1,075		
	2 1,000 gallon tanks	1,000		
	3 bulk fuel oil storage tanks	67,000	Total	\$113,825
N.H.W.	1 ski-doo and trailer	950	Total	950
RCMP	1 trap boat with inboard engine	4,500		
	1 komatik	200	Total	4,700
Private				
Non-Eskimo	2 ski-doos	1,700		
	1 canoe and outboard motor	1,075		
	1 komatik	200	Total	2,975
Eskimo**	8 ski-doos	7,000		
	27 canoes	16,200		
	23 outboard	8,000		
	1 whale boat	4,000		
	55 komatiks	11,000	Total	46,200

*Values are based on current replacement costs.

**A more complete inventory of capital equipment is given in the Appendix.

The farm-type trailer and stone-boats are used for general haulage and are attached to one of the tractors. As stated earlier, the snowmobile is in a poor state of repair and reliable only for short-distance travel. It is used primarily to and from the airstrip as a pick-up and delivery vehicle.

The two-bay, aluminum garage, built in 1967, is able to house the largest of the equipment at present in the settlement and allows for year-round maintenance or repair of vehicles. Until his departure in the summer of 1968, the non-Eskimo power-plant operator acted as equipment mechanic. At present the operation of the power-plant has been taken over by the assistant to the administrator and maintenance/repair services are carried out by the driver-mechanic operating the large tractors. The position will, in all likelihood be refilled as soon as a competent mechanic is available.



PLATE V - Spence Bay, showing the nursing station, right centre



PLATE VI - Unloading cargo from the Frank Broderick

With the limited amount of space available for expansion it is very likely that the need will arise for heavy earth-moving equipment for site levelling. At present there is an urgent need for landscaping and road construction to enable vehicles to reach the buildings that have already been constructed, both to provide services and in the event of fire. The boulder-strewn terrain on which the settlement is located makes access impossible to buildings not situated along the main "road". The path to the nursing station has been slightly improved by a small amount of gravel, but is still a hazard for the people using it. Boulders strewn over the school play area limits the space available and increases the possibility of accidents.

Both road construction and landscaping this settlement will be an expensive proposition and the suggestion is offered that consideration should be given to relocating the community before any further expansion is initiated.

Docks and Roads

A summary of what has been stated earlier regarding roads in Spence Bay indicates there is only one crude unsurfaced road extending through the length of the settlement. The situation is unsatisfactory primarily for two reasons; the high cost of road building and maintenance in this terrain, and the limited accessibility to housing that the present road provides.

At times of peak run-off, or after rain, the ungraded surface of the road becomes impassable for pedestrian traffic. As it gradually deteriorates until either extensive repair or an alternative route is required, expenditures on roads are going to become considerably in excess of what they would be at present.

The extent of the road system limits accessibility by vehicles to buildings which are constructed directly on either side of, or within reach of, hoses. Water and fuel oil have to be manhandled to those dwellings beyond the effective range of hoses, and the collection of garbage barrels is made increasingly difficult by having to carry them with care over the boulder-strewn terrain. The present road system would offer the greatest hazard to life and property in cases of fire.

Landscaping has been done to the extent that small rocks and gravel has been used as fill to build paths connecting the Anglican church and nursing station to the road. As the gravel was hauled by dog-team, the amount used was inadequate, and the paths are more of a hazard to the unwary than planning envisioned.

Docking facilities and unloading areas for aircraft and boats were almost non-existent until the summer of 1968. A small, crude, and totally inadequate, partially completed rockpile crib-dock provided berthing facilities for aircraft. It could also be used by canoes and small boats. However, at low tide it was more convenient to enter or disembark from marine craft at the water's edge. Due to the steep sides of most of the shorelines, a small area at the head of the inlet, immediately below the H. B. C. store, provided the only relatively boulder free accessible space where boats and canoes could be beached, without being pummelled on the rocks during bad weather.

During the summer of the survey, one of the white residents, with the use of D. I. A. N. D. equipment, contributed many hours of his spare time to filling the cribbing of the dock, clearing a large area of the shore around it and building a roadway to connect with the main road. The improvement was considerable.

With the arrival of the heavy-equipment operator in the fall an area was cleared and levelled that extended from the shore and the garage up to the road. The shoreline along the rim of this clearing was built up to provide a level and convenient unloading area for the supply ship. Even as a temporary measure it was a distinct improvement on conditions as they had previously existed. More work is needed on the clearing. After rain or melting snow it becomes very muddy.

With the limitations on the space available for expansion of the settlements, the cost of landscaping and road work construction on this rocky, rock-strewn, steeply rising terrain, a relocation of this settlement at a more propitious site might, in the long run, prove to be not only less costly but a general improvement in the total relation of community planning and development.

Housing

The distribution of present land use is shown in Figure 23. With the exception of the leases held by the missions and H. B. C. all lands is owned by the Crown. For the purposes of this report, land use will be divided into three categories of commercial-industrial, institutional, and residential.

Commercial-Industrial

The commercial centre of this community is the H. B. C. store. It forms the eastern end of the settlement and is located on a rising bench of the beach between the head of the inlet and the water supply lake. A store, two residences, warehouses and a powerhouse are the major buildings on this site. The capital investment of the company in this complex is estimated to be around \$125,000.

In view of the rock outcrops to the east and the limitations imposed by the lake and inlet, further commercial-industrial expansion in this area is not possible.

A central location for a craft centre might be feasible but, for industrial complexes requiring warehouse space, sites to the west of the settlement will have to be considered.

Community development plans for the future will need to include sites for industrial-commercial development which will incorporate a storage area, mar shalling yard, space for additional warehouse and an access route to the main road.

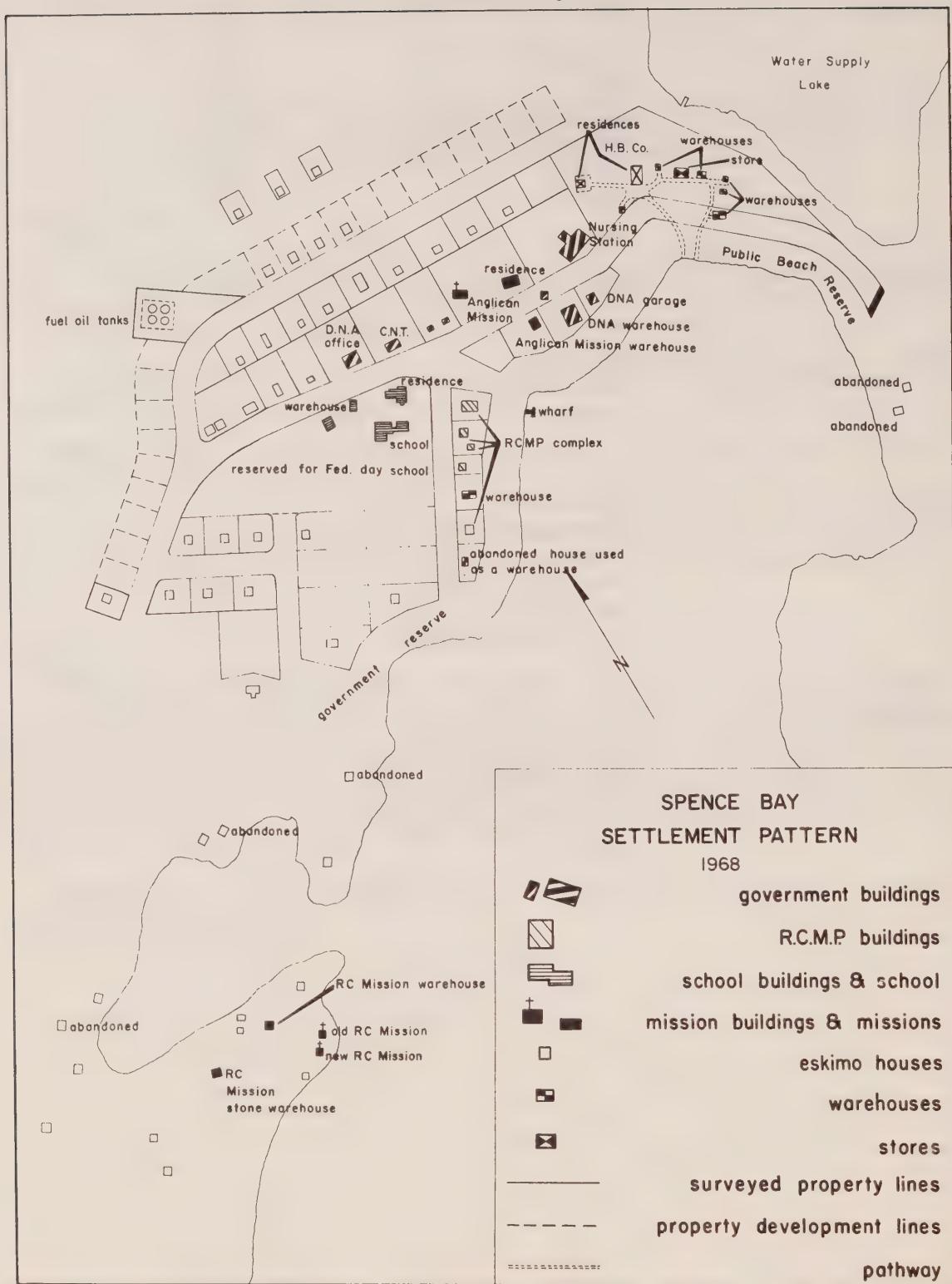
Institutional

The two missions, Federal Day School, nursing station, R. C. M. P., and D. I. A. N. D. complexes constitute the institutional group in the community. With the exception of the catholic mission complex, these buildings extend along the road in an easterly direction from the school and D. I. A. N. D. office in the centre, to the nursing station which is situated nearest to the H. B. C. complex. The R. C. M. P. buildings are located to the east of the school and below the brow of the hill from it. A recently completed catholic church and residence are situated on a gravel and rock outcrop along the shore line some 300-400 yards to the southwest of the settlement.

Estimated and approximate replacement values of capital investments by the various agencies are given in the following tabulation.

Agency	Property	Replacement Value (dollars)
D.I.A.N.D.	1 school 2 teacherages 2 warehouses 1 garage 1 office/transient quarters 1 power plant & installations 1 freezer 3 residences	42,000 60,000 60,000 21,000 28,000 30,000 8,000 90,000
	Total	\$339,000
D.N.H.W.	nursing station and pump house	411,000
	Total	411,000
RCMP	3 warehouses 1 office building 3 residences	
	Total	133,000
ANGLICAN	mission complex a church and minister's residence of frame construction, and a small plywood warehouse comprise the mission buildings	
	Total	65,000
CATHOLIC	mission complex a recently constructed frame church, prefabricated residence, and a wooden warehouse constitute the mission buildings	
	Total	80,000

FIGURE 23



Residential

Eskimo dwellings in the settlement consist of various types and sizes. Between 1960-67 the Department of Indian Affairs and Northern Development constructed 32 houses for resale to the Eskimos or to provide welfare housing.

The first units constructed consisted of one-room dwellings. These have since been reclassified as inadequate by the Department. Most of these houses have remained structurally sound, and alterations have been made locally through the construction of partitions or the addition of porches or storage areas. The condition of these houses is shown as good in the housing inventory given in the Appendix. The newer low-rental housing units, constructed in 1966, have been of the large prefabricated type and have also been classified as good in the housing survey.

Projected expenditure for this community for the next five years includes 28 three-bedroom houses at an approximate total cost of \$463,000.

A rent structure pertinent to old Eskimo housing did not exist for these settlements. Rent for the newer buildings varies according to the standards of the renting agency, and on the basis of incomplete data compiled during the survey, the average monthly recovery through rents is roughly \$20 per unit at Spence Bay.

Conditions of overcrowding, or sub-standard housing, has resulted as increasing numbers of families have moved away from permanent camps and settled in the community. This has been achieved by either sharing the accommodation of relatives or by building shacks out of whatever was available in the way of spare lumber.

Eighteen low-rental housing units were delivered to the settlement during the shipping season of 1968, with the additional 18 units to be erected in 1969-70, the present conditions of over-crowding and inadequate housing will be eliminated. However, as the rate at which new families are formed increases, the requirements for more housing will immediately arise.

Eskimo housing in the settlement, at the time of the survey, is categorized below according to the standard plans of the Department and does not include the 18 units mentioned above. Further details are given in the housing summary.

Agency	House Type	Number	Estimated Value (dollars)
D.I.A.N.D.	Standard Plan		
	model no. 370A	16	81,920
	model no. 408	1	9,000
	model no. 396	2	18,000
	model no. 424	3	12,000
	model no. 409	1	9,000
	prefab	2	40,000
	frame	2	18,000
	Total		\$196,920
H.B.C.	frame	1	9,000
	Total		9,000
OWNER OCCUPIED	shacks	15	3,000
	tent-frame	1	100
	Total	44	3,100

Under the rental agreement, occupants of the low-rental units are entitled to deliveries of fuel and water, and with the installation of electricity, to a quota of hydro. Basic furniture is included with the building and the Eskimos may augment this if they choose.

Due to the permafrost and uneven terrain on which the settlement is located, houses are constructed either on a pad consisting of rock ballast surfaced with gravel, or on rock or woodpilings. The latter is a less satisfactory method as the elevated floor presents another surface that can be cooled, and one that is in more direct contact with the occupants.

As stated earlier, with the physiographic restraints placed on the expansion of this community, and the rocky sloping nature of the site it might be advisable to consider relocating this settlement before more construction work is done.

Commercial Institutions

The only commercial institution at Spence Bay is the Hudson's Bay Company retail store. In 1948 the post was relocated on the present site from Fort Ross and has become the focal point of trading for the whole of the Boothia Peninsula.

This store has probably been the most important single factor that has contributed to the growth of a settlement. It has prevented the break-up and dispersal of the population to other localities after the closure of the post at Fort Ross.

The company's staff at this post in 1967 was composed of a manager and a clerk, both of whom were non-Eskimos, and two full-time Eskimo employees. During the shipping season the company employs a number of local Eskimos on a casual labour basis to assist with the removal and storage of freight.

The post manager operates one of the radio-telephone sets in the community and provides data on weather and ice conditions for D. O. T.

Community Clubs and Recreational Facilities

Included in this section are all the local community organizations irrespective of their functions.

At Spence Bay there are five community organizations which cater to various age groups and interests. Two of these are open to children of school age and are organized by non-Eskimo adults.

A Junior Auxiliary for girls has been formed by the wife of one of the R. C. M. P. officers. Weekly meetings are held in the house of this couple, where workshops and discussions centre around sewing, knitting, cooking and allied subjects. The size of the membership is limited by the numbers that can be accommodated in the living room. Attendance by the dozen members who range in age from 10 to 15 years is regular and enthusiastic.

During the winter, the cub troop, organized by one of the R. C. M. P. officers, holds weekly meetings in the school, and appears to have a high attendance record.

As already stated there is a Women's Auxiliary of the Anglican church. The executive of this group is elected on a yearly basis and is composed of both Eskimos and non-Eskimos. Weekly meetings, held either in the school or rectory hall, appear to be well attended. The auxiliary has so far provided the interior furnishings for the church, and undertakes to furnish and decorate the building for services.

A community association, with membership open to the whole community, has a mixed ethnic group executive. Officers are elected during the fall when summer camp groups have returned to the settlement. This allows for participation by non-Eskimo newcomers to the community, and by the teachers who have returned. The club is authorized to organize a program of entertainment for the community, such as movie shows, dances, a Christmas party for both adults and children, and a sports day, held for the last two years during the Easter school vacation.

An Advisory Council, appointed by the Area Administrator, includes representatives from all the agencies in the settlement and the Eskimo community. This body has a table of monthly meetings. Additional meetings are convened as required. The function of the Advisory Council is to assist with the formulation of plans for community development projects and to discuss and implement proposals suggested by the administration. This group is included in all aspects of community activity and fulfills a fundamental role in developing community participation in matters pertaining to the settlement as a whole.

Spence Bay lacks a community hall that can be used for recreational purposes and meetings. D. I. A. N. D. and the H. B. C. have, on occasions, been able to provide a warehouse for use as a community hall, but more often than not a school classroom is used for showing movies, for dances or meetings.

Apart from the inconvenience to the teaching staff, the classroom is not spacious enough to accommodate a large audience. What this settlement does require is a community-centre complex in which is housed a number of activity centres.

In view of the high costs associated with buildings in these northern communities, and those of heating the structures, it is suggested that the costs might be minimized by a multi-purpose building rather than the fragmentation that results from developing a number of discrete units catering to specialized uses. Apart from reduced building and maintenance costs, full-time employment for at least one person would be required for such a centre.

The type of building suggested is a two-storied structure of which the upper floor could be used as a modified gymnasium and recreational centre, with a ground floor plan allowing accommodation for four large rooms which could be equipped to provide bath facilities, a laundry, drying and ironing area, a library, and a catering room. The last two of these could double as accommodation for committees or club meetings, and one as an activity centre for young adults.

Whatever approach is taken to these community needs this settlement would be enormously improved by the additional services, and by space in which to participate in activities.

Population

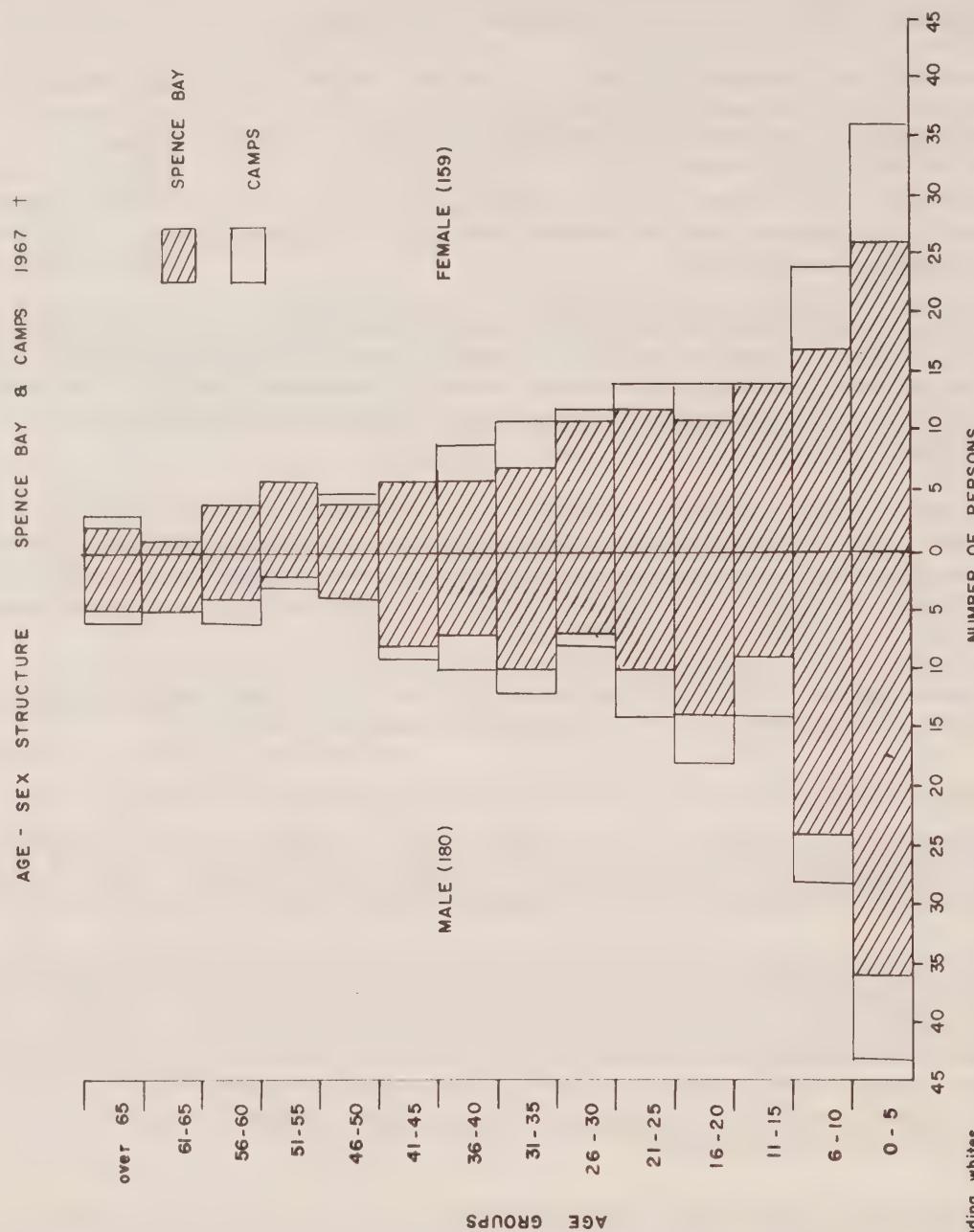
December 1967 was selected as the cut-off point at which to calculate the population structure for the total population. This was done to be able to relate residence and family size to other data, which would have required continuous revision to accommodate the changes occurring in the Eskimo population.

Included in the population figures for all three of the settlements are those people who were out at school on vocational training courses, or in hospital. These people have not been considered as losses to the population as they eventually return, even though the period of absence may be for a number of years. Only those people who have migrated out of the area, and who, due to marriage or employment have not returned for a period of three years, have been excluded from the population figures. The group that moved to Arctic Bay from Creswell Bay in the spring of 1967 has also been excluded as the expressed rationale for the move was to locate at this settlement.

At the time of the survey, people who had recently immigrated to a settlement were included in the population of the settlement of residence if they had spent over eight months in the community. This was necessary to cover the inter-settlement movement of groups whose income had been derived from the resources available in the new location. These people also required housing, and as their previous dwellings had usually been taken over by other families, this procedure appeared to offer a more accurate perspective of one particular time-span, irrespective of the degree of permanency of these immigrations for the future.

The population pyramid given in Figure 24 includes the settlement at Spence Bay and the permanent camp groups on the Boothia Peninsula. It can be observed from Figure 24 that there is a predominance of young people in this area. Almost half of the population is below 16 years and approximately 77 per cent below 35 years, and only 4.4 per cent are above the age of 60. A comparison with the Northwest Territorial

FIGURE 24



† excluding whites

Source: RCMP records and residents of settlement

population, given in the following table, indicates this is fairly representative of the total population of the Territories.

Population, Northwest Territories

Ethnic Group	Total	Age 35 & Less	Age 60 & Over
		(per cent)	(per cent)
Eskimo	9412	79.7	3.3
Indian	5407	72.6	8.5
White and other	9765	71.7	2.9

Source: The Northwest Territories Today, Ottawa 1965

As the population structure of the permanent camp groups has been included in the population pyramid (Figure 24), a further breakdown of the figures is given below. These figures pertain only to the permanent camps as they existed during the period for which the survey was done. With the movement of the Thom Bay group into the settlement at Spence Bay in the fall of 1968 these figures are now of academic interest only. The total population of the permanent camps was 67 or about 19 per cent of the total population of the Spence Area.

Camp Location	Age Groups				
	0-5	6-15	16-35	36-65	66+
Creswell Bay	1	3	4	2	
Fort Ross	1	2	2	1	
Agnew River	2	3		2	
Thom Bay	13	8	15	6	2
Total	17	16	21	11	2

As previously stated, early figures for the survey area do not give a true indication of the size or yearly variations of the total population. Until the mid-1950's increases in these figures were more representative of the inclusion of previously unknown groups rather than the natural increase. The following table statistics from 1954 was compiled from R. C. M. P. records. (The detachment has been the centre of vital statistics registration since its establishment in 1949.) The figures given include groups at Spence Bay, Gjoa Haven, Pelly Bay, Back River, and permanent camps.

Vital statistics for the Eskimo population of the Northwest Territories published by the N. H. W. and given below, indicate that the high birthrate and the natural increase in this population is not a typical of the Eskimo population as a whole.

Year	Birthrate	Deathrate	Natural Increase
1965	65.8	11.1	44.7
1966	54.4	12.6	41.9
1967	53.4	10.3	43.1

Source: Report on Health Conditions in the Northwest Territories 1967. Northern Health Services.
Department of National Health and Welfare, Ottawa, 1968.

This report also indicates that among Eskimos, diseases of the respiratory system account for almost one-third of their admissions to medical institutions, with pneumonia and accidents being the highest causes of death. The lowest average deathrates for the last three years given in Table 23 might reflect the public health and treatment services that have been made available through the extension of medical services in

TABLE 23
Yearly Averages of Birthrate, Deathrate, and Natural Increase

Year	Births	Deaths	Natural Increase	Total Pop	Average* Birth Rate	Average* Death Rate	Average* Natural Increase
1967	39	5	34	722	54.1	6.9	47.2
1966	44	8	36	686	64.1	11.6	52.5
1965	31	9	22	664	46.6	13.5	33.1
1964	47	18	29	635	74	28.3	45.7
1963	39	15	24	611	63.8	24.5	39.3
1962	32	16	16	595	53.7	26.8	26.9
1961	35	18	17	578	60.5	31.1	29.4
1960	41	32	9	569	72	56.2	15.8
1959	27	24	3	566	47.7	42.4	5.3
1958	35	32	3	563	62.1	56.8	5.3
1957	40	25	15	548	72.9	45.6	27.3
1956	31	27	4	544	56.9	49.6	7.3
1955	18	15	3	541	33.2	27.7	5.5
1954	22	9	13	528	41.6	17	24.6

Source: R.C.M.P. records at Spence Bay

* Per 1,000 population

1962. With the infant mortality rate and the deathrate in the one to four year-old age group for the Eskimos being the highest for all groups in the country, the increasing urbanization of these populations has made possible preventative education and the early treatment of this highly susceptible group. During the period 1955-1967 the Eskimo infant mortality rate alone for the N. W. T. has decreased to one third of what it was.

The narrow apex of the pyramid indicates a relatively short life-span, which appears to suggest that the small number of persons in the older-age categories is due in large part to the harsh conditions of life during the past, when a subsistence economy prevailed.*

Non-Eskimos

As the non-Eskimo population in the settlements tend to vary from year to year, and do not participate in the economic process of the communities, they have been excluded from the economic aspects of the report. Their inclusion in the population statistics would result in an unnecessary distortion of the figures as the positions available to non-Eskimos can be filled by either single people or married couples with families.

A list of permanent employees by ethnic group and sex is given in the section on the economy of each settlement, which provides a rough index of the possible size of the white community.

GJOA HAVEN

Introduction

The Eskimo population in the region to the east of the Boothia Peninsula was distributed in small groups on King William Island and along the mainland coast. Their camp sites were located from Perry River through the Adelaide Peninsula down Chantrey Inlet, along the Back River, and up the south western region of the Boothia Peninsula. As stated previously, the largest grouping of Eskimos in this western region occurred along the Back River.

The site is of historical interest in that from 1903-05 Amundsen wintered in this harbour and camped on the edge of the plain overlooking the inlet. A stone cairn has been created on the site, containing documents and artifacts left behind by the expedition. The sojourn of the expedition provided the first long-term contact between the two cultures.

The first trading post in this area was operated by the Canalaska Trading Company at Perry River from 1924. In the fall of 1927 the company opened another post at Gjoa Haven. With the closure of the latter in 1932 the Hudson's Bay Company erected a store at the present site in Gjoa Haven. This post was the trading centre for the Eskimos of the Adelaide Peninsula, Back River, Netsilik Lake and the people as far east as Lord Mayor Bay until 1948, when the store at Spence Bay was built. Over the years, the camp populations in the area have settled for longer periods in the vicinity of the post and when catholic and anglican missions were built in 1953 and 1956 the number of permanent residents was expanded. The closure of the Hudson's Bay Company post at Perry River in the summer of 1967 led to the dispersal of a number of families and at present the seven families at Back River are the only permanent camp group left in this area.

Location and Site

South-west of Schwatka Bay, on the west coast of King William Island, the coastal indentation forms Petersen Bay. The eastern side of this bay is penetrated to a depth of about half a mile in a northerly direction by a narrow inlet, Gjoa Haven. The inlet maintains an average width of about 800 yards to its head. The land surrounding it rises gradually to a height of about 160 feet and two small streams enter it on the western side near the head. It is an excellent harbour for small and medium-sized vessels.

The settlement is situated on a sandy beach at the head of the inlet and consists of buildings belonging to the Hudson's Bay Company, the Catholic mission, the co-operative, and various government agencies. There has been an increase in the last few years in Eskimo housing and these at present number 36.

A broad, swampy gully, and a low range of hills, form the western boundary of the settlement, while to the north and east the land rises gently to a sandy plain. An old watercourse, running through the centre of the site, dissects the settlement and limits the amount of expansion that can occur in the western sector of the site. Future expansion can occur in an easterly direction as far as the steeply rising cliffs or in a northern direction where the land rises more gently.

Transportation

The transportation systems connecting this community with other centres are the same as those servicing Spence Bay. These have been dealt with in greater detail elsewhere in the report.

Communication Systems

This settlement also has a weekly mail delivery, and as with Spence Bay, it is also connected via Cambridge Bay to all parts of Canada by radio-telephone. The H. B. C. operate both their own radio network and the C. N. T. service for the general public, and the Catholic mission has its own equipment and circuit.

Utilities

Waters

The Kekertak Co-operative at Gjoa Haven holds the contract for the water delivery service. During the summer, water is obtained from the shallow lake to the north-east of the settlement, and during the winter from a large lake to the northwest that does not freeze to the bottom. Forty-five-gallon drums mounted on a vehicular-drawn stone-boat are used to haul water to the settlement.

The government dwellings and laundry are equipped with large storage tanks, and a variety of containers are used by the Eskimos.

Suggestions made regarding more hygenic water storage facilities for Eskimo houses at Pelly Bay would be as applicable to both Gjoa Haven and Spence Bay.

Sewage and Garbage Collection

Bi-weekly garbage collection services are also provided by the co-operative and the system used is similar to those of the other settlements. At Gjoa Haven not all the houses were provided with garbage barrels. In these instances, refuse is deposited in a barrel nearby, or left outside the house until the pickup. The settlement could be improved by equipping each residence with garbage barrels and placing these on platforms out of the reach of dogs, and where they are less easily pushed over by children.

The garbage is burned at a dump about one mile east of the settlement. This system appears to be more efficient than dumping on the sea ice.

Heating

In this settlement the D. I. A. N. D. also act as agents for the supply of fuel oil. The co-operative is the delivery agent and makes a charge of 4 cents a gallon. The equipment used is similar to that at Pelly Bay, but at Gjoa Haven fuel oil is delivered in 45-gallon drums, and five barrels at a time are delivered to each Eskimo dwelling. The quota per house is 18 barrels a year. With the erection of two 52,500-gallon bulk storage tanks in 1967, it became possible to ship and store fuel at a reduced cost and removed the hazard of insufficient reserves.

The approximate annual fuel consumption and projection for 1969-70 are given below, with an estimation of costs based on the 1967 onsite delivery cost of 63.6 cents per gallon.

Year	Quantity (gallons)	Cost (dollars)
1967-68	60,500	38,500
1968-69	72,000	45,800
1969-70	84,000	53,500

Health

The medical services of this community are similar to those of Pelly Bay, except that the Lay Dispenser contacts the hospital staff at Cambridge Bay for advice, or in cases of patient evacuation. As already stated, the nurses at Spence assist with the medical problems of this settlement by providing treatment and acting as escorts when the emergency flight to Gjoa Haven originates at Spence.

The catholic mission has made available a room in the mission building for use as a dispensary-treatment centre by the Lay Dispenser and visiting medical personnel. As with Pelly Bay, the provision of more adequate medical facilities and personnel will be invaluable in minimizing the hazards of illness, and improving the general health levels of the community.

Law Enforcement

The R. C. M. P. officers from Spence Bay make periodic visits to this settlement to register changes in the population, issue hunting licences and fur tags, record game-take and distribution, immunize the dogs, and generally maintain communications with the Eskimos.

Religion

Religious affiliations of the Eskimos in this community are almost equally divided between the Anglican and Catholic churches. A priest from Pelly Bay makes periodic visits to the settlement, and in his absence a trained catechist carries on the ministry. The resident Anglican minister is one of a small group of Eskimos who have been ordained by the church. Both missionaries are active in the affairs of the community and are members of various committees. In addition to their religious duties, both missionaries have maintained an identification with the way of life of the Eskimos by continuing to hunt, trap, and fish. As the catechist is also the manager of the Eskimo co-operative, the time available to him for these activities is somewhat limited.

The Women's Auxiliary of the Anglican church is also an active organization in this community. The wife of the Anglican minister is president of both the territorial and local executive of this organization.

Education

A two-classroom school, that included living accommodation for teachers, was built in 1962 by D. I. A. N. D. A three-bedroom house was constructed three years later, the lower portion of which was used as a classroom in the following year. In 1967 a boiler room, hallways, and cloakroom space were added to the main building.

During the summer of 1968 a prefabricated classroom was shipped in for completion and use as soon as possible. Approximately \$153,000 has been spent on this complex since 1962. With 48 children in the 0-5 age group another classroom is likely to be required in the next three to four years.

As seen from the table in the Appendices, school attendance in this settlement is the highest. The reasons for non-attendance are similar to those at Spence Bay, except that where medical reasons have been given as the cause of absence, the illness has been severe enough to require hospitalization or for the child to be confined to bed for a long period. The late registrations at the beginning of the school year and the absenteeism during May and June are, as with Spence Bay, due to the late return of families from summer fish camps and an increase in sealing-fishing activity.

The high level of school attendance would suggest that a pattern of trapping, similar to that at Spence Bay, appears also to operate at Gjoa Haven.

Two people have had vocational training through government agencies and are employed in the capacities for which they were trained (Lay Dispenser and teaching assistant). Two others have had training through religious organizations and both are functioning as the missionaries of the settlement. One of these men is also the manager of the co-operative.

In this settlement the education-employment follow-up showed there were nine adults between the ages of 16-25 who had received some formal education excluding vocational training. The figures are summarized below.

Single	Married	Single	Married
Permanently Employed	Permanently Employed	Casual Labour or Unemployed	Casual Labour or Unemployed
Male Female	Male Female	Male Female	Male Female
1 -	1 -	4 1	- 2

One single and one married man have been able to obtain permanent employment in the settlement, two of the other single men obtained short-term construction jobs on the Great Slave Lake Railway, the remaining two had left the settlement and obtained casual labour in Cambridge Bay and Yellowknife.

The linguistic skills of the sample group of men and women are categorized below. The sample represents 74 and 61 per cent of the males and females respectively over the age of 16 years.

The education levels and linguistic skills of this group are similar to those of Spence Bay. Hospitalization and employment away from the settlement was again instrumental in increasing proficiency in the use of a second language.

Linguistic Ability and Comprehension of English

	Men	Women
Sample	35	31
High	9	7
Low	5	2
None	21	22

Years of Schooling

Years	Men	Women
1	4	0
2	2	2
3	1	0
4	4	1
5	1	1
6	2	2
No schooling	21	25

Administration

The school principal in this settlement performs administrative duties during September through June. For the remaining months, the area administrator at Spence Bay assumes the responsibilities and makes frequent trips by aircraft to the settlement. A committee composed of Eskimos assists the principal with the issuing of welfare vouchers, and during his absence in the summer are empowered to fulfill the function.

In this settlement the administrative role is more complicated as there is no nursing station. In the event of accidents, emergencies or serious illness it becomes the responsibility of the administrator to contact the National Health and Welfare doctor at Cambridge and arrange evacuation of the patient. This entails some description of symptoms and the case history so that emergency equipment and personnel can be dispatched to provide treatment as rapidly as possible.

Equipment and Maintenance

Most of the light and medium-sized vehicles given in the equipment inventory are owned and serviced by the Kekertak Co-operative. All the equipment inventory are owned and serviced by the Kekertak Co-operative. All the equipment has been purchased secondhand and is in poor mechanical condition.

Until it broke down, the most servicable of the bombardiers had been used during the winter of 1967-68 to haul fish from Back River. After that the G 5 was fitted with a komatik and continued the fish-haul. This vehicle is also used to draw the stone-boats for the utility services.

As there is no garage or indoor service shelter for vehicles, servicing and repairs have to be done out-of-doors or under an improvised heated shelter. Where possible, repairs are deferred until the weather is warm enough to render working out-of-doors for long periods less uncomfortable.

Table 24

Equipment Inventory

Gjoa Haven, 1968

<u>Agency</u>			Approximate Value*	(dollars)
<u>Government</u>				
D.I.A.N.D.	1 autoboggan 2 bulk fuel storage tanks	1,500 54,000	Total	55,000
<u>Private</u>				
Non-Eskimo	1 ski-doo	850	Total	850
Kekertak Co-operative	1 ski-doo 2 bombardiers 1 G 5 3 stone-boats 1 crawler tractor 1 whaleboat	850 11,000 1,500 900 21,000 4,500	Total	39,750
Eskimo**	8 ski-doos 12 canoes 10 outboard motors 2 whaleboats 20 komatiks	7,000 8,400 4,000 9,000 4,000	Total	32,400

* Values are based on current replacement costs.

** A more complete inventory of capital equipment is given in the Appendix

The assistance of an experienced mechanic would be an invaluable service to the co-operative and to the community. If, when there is a full-time mechanic at Spence Bay, this individual could make routine tours of both Gjoa Haven and Pelly Bay to advise and assist with the general maintenance of equipment, and the ordering of spare parts, the wear and tear on vehicles might be minimized and fewer problems would arise.

Docks and Roads

Situated as it is along the sandy shoreline of the bay, the need for roads in Gjoa Haven has been less than at the other settlements. At the time of the survey there were no formal road systems and, except for the gully through the centre of the settlements, vehicles were able to travel through the community without being confined to any particular route. The route to the airstrip has developed from usage.

A dock, extending out from the shore approximately 200 yards from the school, provided adequate berthing facilities for aircraft. Boats were conveniently beached along the sandy shoreline and could be easily drawn up out of reach of water or ice.

Housing

Figure 25 shows the present land use in the settlement. All land in the community is owned by the Crown.



PLATE VII - Gjoa Haven: (left to right) part of the
Roman Catholic Mission, Co-operative owned buildings and
and Federal Day School



PLATE VIII - Stone cairn erected at Amundsen's campsite

Commercial-Industrial

The Hudson's Bay Company and the Kekertak Co-operative are the principal commercial agencies in the community. The two companies are located almost in the centre of the settlement on either side of the gully. The H. B. C. buildings are flanked on the west by an Anglican church and Eskimo dwelling, with the gully forming a boundary to the west.

A two-storey frame building, belonging to the Catholic mission in the eastern section of the settlement, is a multi-purpose unit. The building not only provides living accommodation for the mission catechist and his family but contains the offices of the Kekertak Co-operative, provides a clinic storeroom for the Lay Dispenser and has a large room that is used for religious services and meetings. In this vicinity are also located the mission and co-op buildings that provide warehousing and living accommodation for a number of Eskimo families.

As the community is at present extending in a westerly direction, the future commercial-industrial needs of the settlement should be assessed and some land allocation made for commercial or industrial development. The present sites most appropriate for these purposes are located on the periphery of the western section of the settlement, or to the north adjacent to the airstrip. The latter site is more centrally situated and would be easily accessible to both residential sections of the settlement as well as to the existing fuel oil and hydro outlets. Moreover, it would be on the main road running from the airstrip to the settlement, and from there to the beach unloading area.

In this settlement it is difficult to provide an estimate of the value of capital equipment due to the multi-purpose usage of the mission building. The value of this building will be included in the section dealing with the institutions in the settlement and the other structures presently used as living accommodation will be included in the section on the residential area.

An estimated replacement value of capital investments of the H. B. C. would amount to approximately \$100,000, and \$15,000 for the Kekertak Co-operative.

Institutional

The two missions and Federal Day School comprise the institutional complexes in the community. As with Pelly Bay, the school principal is also the acting Area Administrator and the departmental plant in the settlement does not include an office complex. Anglican mission capital assets consist of a frame church and residence of the minister, both of which are located to the west of the Hudson's Bay Company complex.

The Catholic mission has seven buildings other than the catechist's residence, some of which are used as a combination of warehouse and residence. One two-storied frame building provides living accommodation beneath the portion used as a church and three other small structures are used as houses.

The Federal Day School and D. I. A. N. D. buildings are located in the section east of the gully in close proximity to the Catholic mission and co-op buildings.

An estimate of approximate values of capital investments in plant is given below.

	Dollars
D.I.A.N.D.	
1 school complex including	
two apartments	130,000
1 powerhouse and installations	30,000
2 warehouses	48,000
Total	208,000

ANGLICAN	mission complex includes a frame church & minister's residence	Total	60,000
CATHOLIC	mission complex includes a frame church- residence, office-residence, and two warehouses	Total	100,000

One proposed expenditure for this community by the D. I. A. N. D. is \$200,000 for the construction of a classroom and activity room in 1970-71. The construction and equipping of a nursing station will require the expenditure of at least \$411,000 by the D. N. H. W. within the next year or two.

Residential

The inadequacy of Eskimo housing in this settlement has developed from cases similar to those at Spence Bay. It has been almost impossible to predict either the degree of permanency or the rate at which permanent camp groups have taken to a more urban type of living. This has resulted in a lag in the provision of houses that has been followed by overcrowding and the construction of scrap shacks by people awaiting a permanent residence in the settlement.

Since 1960 sixteen one-room housing units have been constructed by D. I. A. N. D., and in the summer of 1968, fifteen three-bedroom houses came in by sea lift. Projected expenditures by the Department on Eskimo low-rental housing for the next five years include 10 three-bedroom units for delivery in 1969 and a further five units in 1972 for an approximate total expenditure of \$180,000.

The rental structure of the new low-cost houses is similar to those of the other settlements and includes the provision of service utilities, and basic furniture. On the basis of incomplete data for 1967 the average monthly rental rate is approximately \$20.

The following summary of Eskimo housing in the settlement does not include the 15 houses delivered during the summer of the survey. With the construction of these units the then existing housing inadequacies and conditions of overcrowding should be eliminated to a large extent. The additional 10 units to be built the following year will provide accommodation for the groups migrating from Perry River and Back River, and the five units to be built in 1972 should be adequate to meet the needs of the most recently formed families.

Agency	House Type	Number	Estimated Value (dollars)
D.I.A.N.D.	standard plan model no. 370A	15	135,000
	apts., one in Federal School	1	*
	frame	1	9,000
	Total		144,000
CATHOLIC MISSION	frame shacks	4 3	20,000** 2,000
	Total		22,000
KEKERTAK CO-OPERATIVE	frame	3	27,000
	Total		27,000

FIGURE 25



Agency	House Type	Number	Estimated Value (dollars)
HUDSON'S BAY CO.	frame	1	9,000
	Total		9,000
OWNER OCCUPIED	shacks	7	1,400
	Total		1,400
ANGLICAN MISSION	frame	1	
	Total	36	

* Value of structure included in that of the school buildings

** Value of two included in the church and multi-purpose buildings

Further details on Eskimo housing are given in the Appendices.

Commercial Institutions

The two commercial establishments in this settlement are the Kekertak Eskimo Co-operative and the Hudson's Bay Company. The former, formed in December 1966, is a recent addition to the trading institutions in the settlement, which have existed since the 1920's with the building of the first Candaska Trading Post.

The Kekertak Co-operative

The structure of the co-operative is similar to that of other co-operatives, except that in the settlement the manager of the enterprise has provided his services free of charge, to enable the co-operative to achieve financial stability as rapidly as possible. At present the co-operative is developing mainly as a production agency which purchases locally made handicrafts for resale to outlets in the south. The consumer aspect of the co-operative is confined to the small amount of fish bought from the Back River Eskimos for resale in Gjoa Haven during the winter. The local service contracts, undertaken by the co-operative at present are the major source of income of the enterprise and allows for the full-time employment of two Eskimos.

The Hudson's Bay Company

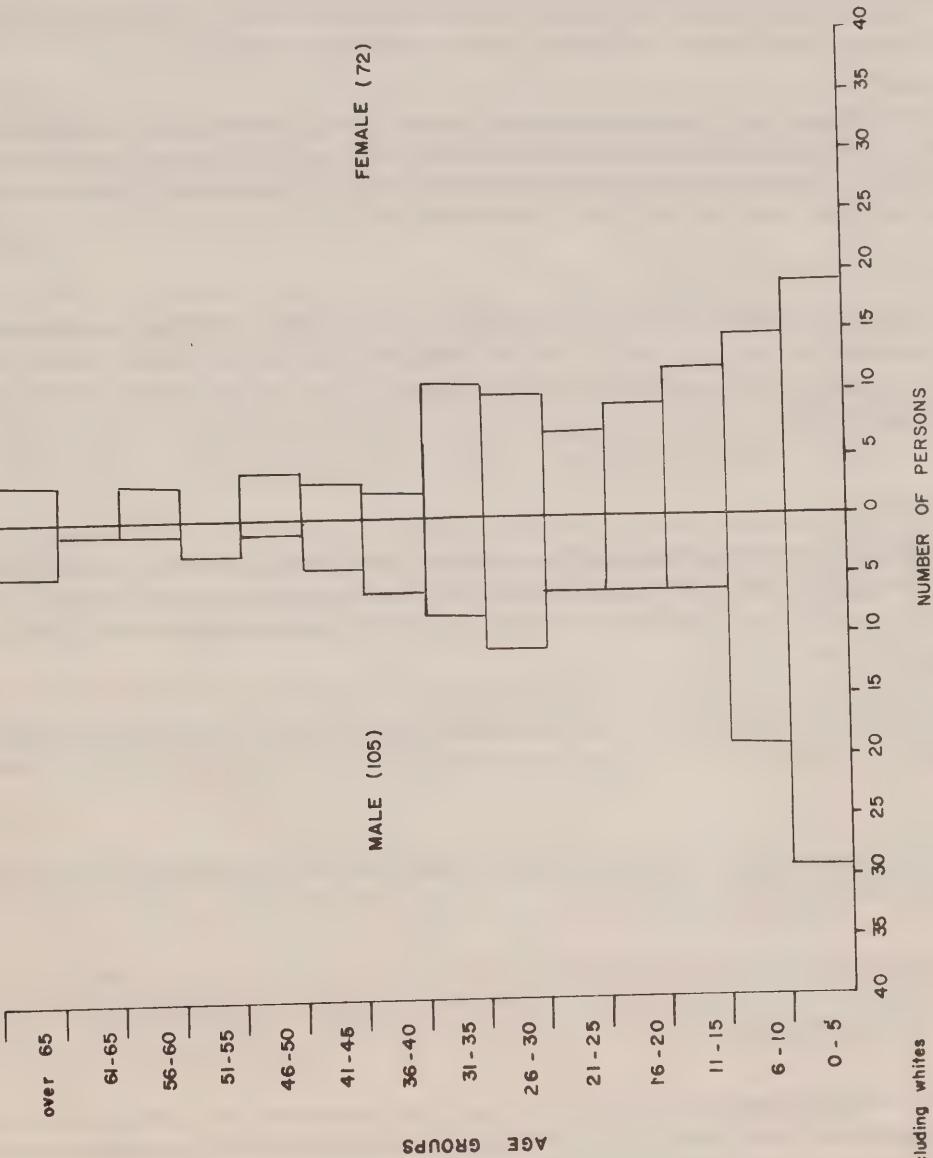
This company operates the only retail store in the settlement. The role assumed by the company is a non-competitive one in regard to the producer functions of the co-operative, in that the company does not purchase carvings and artifacts from the Eskimos for resale. The emphasis of the store is on the retail trade and its importance to the community is its function as a merchant/trading establishment.

The staff of the existing complex is composed of one non-Eskimo manager and two Eskimo employees. The company also employs a number of Eskimos during the summer to assist with the movement of incoming freight.

Apart from the duties connected with the enterprise, the manager operates the radio-telephone communication systems for both the company and the C. N. T., and provides information on ice and weather conditions for the D. O. T. at Cambridge Bay.

The Hudson's Bay Company has been and continues to be, an important institution in the community. There is a good deal of co-operation between the managers of both commercial organizations which is of benefit to the community.

FIGURE 26



† excluding whites

Source: RCMP records and residents of settlement

Community Clubs and Recreational Facilities

This settlement has three community organizations, one is entirely directed by the local people.

The functions of the Women's Auxiliary of the Anglican church are similar to those of other W. A. branches. It is a very active organization in this community. The executive, entirely Eskimo, is headed by the Anglican minister's wife who is also the president of the Women's Auxiliary of the Northwest Territories.

A local advisory council composed of six appointed members who represent the various interests in the community render a service that is similar to that of the group at Spence Bay.

A housing authority formed in 1967 has, to date, been an advisory body on Eskimo housing with authority to supervise the usage by occupants of their dwellings. Periodical community clean-up of litter and the usage of garbage barrels is also part of the jurisdiction of this group. With the construction of the 18 new low-rental units they will also be responsible for the allocation of housing and the collection of rents.

During the summer of the survey, a building from a closed-down DEWline site was in the process of being converted into a recreation hall for the settlement. Hitherto the school has been the centre of recreational activities, with association meetings being held either in private homes or in the spare room of the Catholic mission.

Population

The population of Gjoa Haven is shown in Figure 26, and indicates that the population has structural characteristics similar to those of Spence Bay. As with the latter settlement, nearly half of the population is below the age of 16 years, approximately 83 per cent are 35 years of age or less, and 3.4 per cent are over the age of 60 years.

An imbalance in the number of males to females is most marked in the 0-5 age group. This occurrence is attributed to chance*, but if such repetitions should occur, it could presumably increase future mobility rates.

As stated in the section on the population of Spence Bay, vital statistics have been computed for the area as a whole and are given in Table 18.

Changes which have occurred in this population in the last few years have predominantly been the direction of an inward movement toward the settlement of permanent camp groups on King William Island and the Adelaide Peninsula.

Two families emigrated to Spence Bay during 1967 and another to Roma Junction in Alberta in 1967. Migration to Gjoa Haven has resulted from the relocation of two families from the Back River. During the summer of the survey, three families had also moved into the settlement from Perry Island and were unsure whether they intended to relocate permanently in the settlement or not.

Population movements most likely to occur in the near future are those of redistribution, which would alter the statistics of the area to the extent that the Perry River group has not been included in the figures for the area. With the construction of new housing in the settlement, the chances are that some of the Perry River people will remain at Gjoa Haven, and that the movement of families from the Back River to the settlements will accelerate.

* Dominion Bureau of Statistics, *Canada Year Book*, Queen's Printer, Ottawa, 1966, p 249 states, ". . .the smaller the total number of births the greater the chance of wide sex ratio variations from year to year."

PELLY BAY

Introduction

In this area the Eskimo population was also distributed throughout the region in scattered camps, but they were particularly drawn to the present site of the settlement because of the good fishing in the Kukadjuk River. In 1936, the first permanent buildings, built of local stone, were erected by the Catholic mission. During the past several years the Eskimo people have gradually settled around the mission area and have come to view this as a base from which to carry out their hunting and fishing activities. Spring and summer camps appear to have diminished to the point that there are only three of these during the period May to September, 1968.

The construction of a school in 1962, a store in 1966, and 32 low-cost houses for the Eskimos in 1967 has resulted in the transition of Pelly Bay from a seasonal camp trading into Repulse Bay, to a permanent settlement. With the construction of a community hall, transient quarters, laundry, and bakery the community now provides a wide range of services and facilities for the new urbanites.

Location and Site

About 11 miles southward of Logan Bay the east shore of Pelly Bay enters the wide island-studded inlet of St. Peters Bay. The Kugajuk River flows into the head of St. Peter Bay and the settlement of Pelly Bay is located on the southern side of the river near its mouth.

The area is characteristic of Canadian Shield, consisting of huge rock outcrops and intervening areas of relatively level till plain. The Kukadjuk River and its steep southern bank combine with the rocky shore line of the bay to form the boundaries of three sides of the area in which the settlement is situated.

The new housing has been placed in an area which has good development potential, although shallow lakes within the area further restrict immediate development. Reclamation by means of drainage and gravel-fill can be initiated as required, and with an extensive gravel deposit about two miles to the south of the settlement the problem of expansion in this community is not insurmountable.

Until the winter of 1967 the permanent buildings in the settlement were those owned by the Catholic mission and government agencies. In April of 1967, 32 Eskimo houses were air lifted to the settlement from Churchill and erected at the rate of one house per day.

Transportation

Freight for this settlement was shipped by boat to Repulse Bay and, when possible, transported from there to Pelly Bay by aircraft, or by dog-team in the winter. Freight also reached the settlement via the DEWline site, some 12 miles to the south-east from where it was hauled by tractor or dog-team.

Since the spring of 1966, Hercules or Bristol aircraft have made at least one flight from Yellowknife and brought in the bulk of the freight. In the spring of 1967, 32 houses were air lifted to Pelly Bay from Churchill, but at present the settlement does not have a defined pattern of transportation services.

Air service to the settlement is by charter from Spence Bay. During 1967, exclusive of the spring air lift, 54 chartered flights were made to Pelly by the D. I. A. N. D. and D. N. H. W. for administrative or health purposes. Other modes of transportation are similar to those at Spence Bay.

Communication Systems

Due to the absence of a scheduled air service the mail service to and from this settlement is erratic. Mail destined for Pelly Bay is deposited at Spence until there is a charter going in to the settlement. As there is no post office, incoming mail is disposed of in a haphazard manner, and outgoing mail is posted in Cambridge Bay usually through the good offices of the pilot. Other services normally associated with a post office are not available, and problems arise regarding obtaining stamps, c.o.d. parcels, money orders, registered mail.

It is suggested that even minimal postal facilities in this settlement, such as a system for the collection and disposal of mail and the purchase of stamps and money orders, would be of considerable assistance to the community.

The other system of communication is by radio-telephone. The C. N. T. equipment is housed in the school and operated by the teacher. In summer, contact is maintained through the mission radio or assistance may be obtained from the mission in operating the C. N. T. radio set.

Utilities

Water

With the construction of 32 houses for the Eskimos in 1967, the water delivery service has been extended to include these residences. The equipment used for the delivery of water is similar to that at Spence Bay.

The summer water-supply lake is almost a mile from the settlement, and its local watershed area does not appear to be in danger of contamination from settlement runoff. During the winter, river water is obtained from a site above tide-water, approximately two miles from the settlement. Ice floes, which had been deposited on the shore by wind and tide action, also provided a source of fresh-water, but with the establishment of a regular water delivery this practice appears to have diminished.

The Koomiut Co-operative holds a contract from D. I. A. N. D. for supplying water to the community. In the Eskimo houses, storage is generally in 30-gallon plastic containers located within the dwellings. The supply for the school is stored in a 1,000-gallon metal tank installed in a shallow basement.

The method of water storage within the houses should be considered as part of the water-supply system. It is suggested that these containers should be set well off the floor and a bottom tap inserted into the container. This would encourage the use of the tap and discourage the removal of the cover and dipping utensils into the water.

Sewage and Garbage Disposal

All homes are provided with plastic bags for use with chemical toilets and the collection of other garbage. The disposal area is a site well away from the community. In this settlement the 45-gallon drums are on elevated platforms outside the dwellings to keep them out of the reach of dogs.

Contractual garbage pick-up services are performed by the co-operative, and the system is satisfactory. With the assistance of the housing association a periodical clean-up around disposal barrels should be encouraged.

At present the school and teacherages are the only buildings with facilities for the disposal of effluent which is pumped out and hauled away. Waste water from the Eskimo houses is disposed of by draining out below each house. For this reason, it is imperative that sufficient gravel is available to prevent the formation of surface ponds both under the buildings and on the surrounding areas.

Heating

With the building of the low-rental Eskimo houses in 1967, the residents of this community must now depend upon fuel oil for heating and cooking purposes. The co-operative is responsible for the delivery of fuel to buildings and uses the same type of equipment as do the other settlements to haul fuel in bulk. Each housing unit has an adjoining storage tank elevated on a platform, and is refilled from the delivery vehicle.

Prior to the initiation of the spring air-lift in 1966, petroleum products for the settlement were shipped in 45-gallon drums to either the nearby DEWline site or to Repulse Bay, where it was hauled to the settlement in winter by dog-team or a sled drawn by a motorized vehicle. With the construction of three bulk-storage tanks (total capacity 300,000) within convenient pumping distance of the airstrip, fuel oil has been flown in by tanker aircraft. That this is the most expensive method of delivery is evidenced by the fact that the cost of fuel delivered at Pelly Bay amounts to approximately \$1.25 per gallon.

In view of the increase in size and number of houses, motors, and other vehicles in use, the requirements for fuel have escalated sharply and may be expected to do so as the government service agencies expand plants and equipment.

The fuel consumption and approximate costs for a three year period based on 1967 are stated.

Year	Quantity (gallons)	Cost (dollars)
1967-68	80,000	100,000
1968-69	92,000	115,000
1969-70	109,000	136,250

Alternatives to minimize the increasing costs of maintaining the services for which fuel oil is required in quantity should be considered. One of these might be to haul oil in bulk from Spence Bay during the winter. The other might be to reduce the consumption of oil by a more extensive use of hydro for heating and cooking.

Health

The Northern Health Services program calls for visits to the settlement by a number of medical specialists including a doctor, dentist, and nurse. General health check-ups, immunization, and chest x-rays form the major portion of the specialists activities. Transportation is usually by chartered aircraft.

With the completion of the land-based airstrip the nurses at Spence Bay have endeavoured to hold regular monthly clinics in the settlement.

First-aid and other minor treatment were provided by the Catholic priest, and at present is the responsibility of a recently appointed Lay Dispenser. Cases requiring intensive care are flown to nursing stations at Spence Bay or Cambridge Bay, and in some instances directly to Yellowknife. There is no clinic or other area especially designed for the isolation of patients, or for their treatment in sterile surroundings, for which there is an obvious need. The provision of nursing station and medical staff has been slated for completion within the next two years.

Law Enforcement

The staff of the Spence Bay R. C. M. P. detachment make inspection trips as required. The incidence of lawlessness at Pelly Bay is negligible, and the duties they perform in this settlement are similar to those carried out in other communities.

Religion

The Catholic mission is the only religious institution in the settlement.

The missionaries, in addition to their religious duties, co-ordinate and guide the people in the physical and social development of their community. The old stone buildings of the mission complex were built in 1937. With the construction of the present church and residence the older buildings were used as craft shops and warehouses. Expansion of the existing facilities was in progress during the summer of the survey and included the addition of a larger chapel and a vehicle garage.

During the early phase of the founding of the mission, missionaries travelled extensively in the area, but as permanent camps gradually disappeared and the population settled around the mission for longer periods, the need for prolonged journeys by the missionaries has decreased. The present activities of the priest have become much more akin to those of a small town in the south.

Education

The one-room school at Pelly Bay was also built in 1962. Attached to the school were two apartments, one was used as a teacherage and the other as quarters for transient government personnel. In the summer of 1968 this portion of the building was in the process of being converted into another classroom, to be ready for use in September. The situation of having only a one-bedroom apartment available for teaching staff is practicable as long as the accommodation is to be occupied by a childless, married couple who were both teaching. Another teacherage will need to be planned for as additional suitable accommodation is not available in this community.

The present school complex, including the recent renovations, have required the expenditure of approximately \$90,000. With an additional teacherage and third classroom this figure will be more than doubled.

With the dropout of one of the older pupils during the first month of the school year twenty-five pupils were registered for the remaining nine months. Of the three settlements Pelly Bay had the lowest percentage of attendance for the year. Few explanations for non-attendance were recorded in the school register but discussions with the teacher revealed that while the pattern of late registration and absenteeism for hunting was similar to the other two settlements, the higher incidence of non-attendance was due to parents in this community, who were not only less inclined to insist on their children attending school regularly, but periodically required their assistance in the home.

It also appeared that in this settlement family groups did not go out to winter camps to hunt and trap, and that school children were not gaining experience in the traditional seasonal activities of the Eskimos by missing school, but were being expected to perform household chores during school hours.

The education-employment follow-up for this settlement showed that there were nine adults between the ages of 16-25 who had received some formal education, as the following figures show.

Single		Married		Single		Married	
Permanently Employed	Male	Permanently Employed	Male	Casual Labour or Unemployed	Male	Casual Labour or Unemployed	Female
Female		Female		Female		Female	
1	1	—	1	1	4	—	1

In addition to their schooling the two single people and the woman in permanent wage employment had received vocational training courses. One single woman and one married woman were unemployed and of the four single men one had gone out to Roma Junction for casual employment. One other married man in this settlement had received vocational training in carpentry and was employed as manager of the co-operative.

The second language proficiency in Pelly Bay is the lowest of all the settlements. Not only has formal education been a recent introduction, but these people have had less exposure to employment away from the settlement and have acquired less fluency during periods of hospitalizations.

Linguistic Ability and Comprehension of English

	Men	Women
Sample	44	35
High	9	8
Low	10	5
	25	21

Years of Schooling

Years	Men	Women
1	2	2
2	4	1
3	3	3
4	2	1
5	1	1
6		3
7	1	2
8		
9	1	
No schooling	30	23

With the exception of two women the sample in this settlements (Pelly Bay) represents the total population of men and women over the age of 16. As with the other communities, there was a distinct relationship between age, schooling, and proficiency in the use of a second language.

Administration

Also at Pelly Bay the school principal functions as the administrative officer for D. I. A. N. D. The role is similar to that performed by the principal at Gjoa Haven, and includes contacting the nurse at Spence Bay in the event of medical problems beyond the scope of the local Lay Dispenser.

During the summer absence of the principal, the administrative duties are usually performed by the priest in charge of the mission, who contacts the administrator at Spence Bay for authority. Frequent visits to the settlement by the latter are, as a rule, sufficient to deal with the routine summer administrative requirements.

Equipment and Maintenance

The D. I. A. N. D. also has a quantity of small capital equipment in the settlement, which is loaned or rented to the co-op to enable this agency to perform the community services.

Most of the equipment listed in the inventory below has been imported into the settlement in the last two years, when the building of the airstrip and plans for the construction of the low-rental housing were operationalized.

TABLE 25

**Equipment Inventory
Pelly Bay, 1968**

<u>Agency</u>		<u>Approximate Value*</u> (dollars)
<u>Government</u>		
D.I.A.N.D.	1 autoboggan	1,500
	1 farm trailer with 1,000 — gallon tank	2,900
	11,000-gallon tank	500
	3 Crawler tractors	27,000
	1 towed scraper	150
	1 Crawler loader	1,000
	3 bulk-oil storage tanks	67,000
		Total \$ 100,000
<u>Private</u>		
Koomiut Co-operative	1 bombardier	5,000
	1 G 5	1,500
	3 stone-boats	900
	3 pumps	1,000
		Total \$ 8,900
Eskimo**	14 ski-doos	11,900
	28 canoes	14,000
	24 outboard motors	9,600
	1 whaleboat	4,500
	41 komatiks	8,200
		Total \$ 48,200

* Values are based on current replacement costs

** A more complete inventory of capital equipment is given in the Appendices

With the construction of a two-bay garage in 1967-68, vehicles can be serviced and repaired on a year-round basis. At present the maintenance and repair of equipment is carried out by the driver-mechanic operating the heavy equipment that is being used to enlarge and resurface the airstrip. With his departure this settlement will require a mechanic/powerplant operator. A suggestion offered, is that a local Eskimo be trained to fill this post as soon as possible so that he can gain experience under supervision and have an opportunity to become familiar with the equipment before assuming responsibility for it.

Docks and Roads

The road system in Pelly Bay has been built in conjunction with the housing program of 1967. There is probably one to two miles of road surface in the community that extends from the airstrip to the Eskimo housing complex. Even though there are only four large motor vehicles using this road, all houses in the community are accessible to the vehicles providing the utilities. The convenience to pedestrian and ski-doo traffic of even this unsurfaced road is considerable.

One infrequently used motor vehicle path which leads down to the aircraft summer docking area has developed from usage.



PLATE IX - The present settlement at Pelly Bay



PLATE X - The first settlement site at Pelly Bay showing the mission and remains of the original stone buildings

FIGURE 27



There are no docking facilities in this settlement for boats or aircraft on floats. The flat, smooth, low-lying rocks along the shore to the north of the mission are a good marine-craft landing and beaching area. Canoes can be pulled up well out of the way of high tide-water and easily removed if endangered by ice pile-ups in the summer. Float equipped aircraft are beached on the rocky gravel spit extending into the mouth of the Kukadjuk River. From the point of view of loading or disembarking passengers the procedure, is at best, unsatisfactory.

Unfavourable weather conditions increase the possibility of damage to the aircraft and danger to passengers. A removable dock for use in the summer would add to the safety and convenience of passengers and aircraft handling.

Housing

The present land-use distribution is shown in Figure 27. All land in this community is owned by the Crown and there are no leases or privately owned lots.

Commercial-Industrial

The main commercial centre is the Koomiut Co-operative Store. It is located on a site closely surrounded by institutional and residential areas. The major buildings on this site are the store, co-op office/craft shop, laundry, and coffee shop. In view of their proximity to the church, school, Eskimo-housing complex, and the surrounding rock outcrop, further expansion will be difficult. Future commercial-industrial needs should be assessed and areas set aside for this purpose. The site most suitable for the location of industrial plants that would afford space for open storage and a marshalling yard, is the area bordering the northwestern rim of the airstrip. Road construction would be minimal, the site is relatively level, and expansion can occur to the northwest towards the settlement.

The replacement value of the buildings owned by the co-operative that are used for commercial purposes would amount to approximately \$35,000.

Institutional

The Catholic mission and the federal day school are two major institutions within the settlement. As the school principal is also the acting Area Administrator, the D. I. A. N. D. does not maintain an office complex. Departmental plant is composed of a miscellany of other buildings.

The old, stone mission buildings are functionally obsolete. Those not in the process of being dismantled are occasionally used as storage space. The church-residence building now in use is built on rock outcrop to the south of the original mission site.

The school and other D.I.A.N.D. buildings are located in the eastern side of the settlement. As seen from Figure 27, both complexes are adjacent to the industrial-Commercial area.

The estimated and approximate replacement values of capital investments by the two agencies are given.

	Dollars
D.I.A.N.D.	
1 school including one three-room apartment	86,000
1 warehouse	18,000
1 power house & installations	30,000
1 butler building	48,000
1 two-bay garage	21,000
1 staff house/transient quarters	9,000
Total	212,000
CATHOLIC	
mission complex includes three warehouses	
Total	85,000



PLATE XI - Eskimo houses erected in 1967



PLATE XII - Federal Day School

Residential

The Eskimo dwelling units in the settlement consisted of the following types.

	House Type	Number	Estimated Value (dollars)
D.I.A.N.D.	standard plan		
	model no. 439	16	144,000
	model no. 436	15	135,000
	model no. 424	3	24,000
	Total	34	303,000

Until 1967 only five resale houses had been constructed in the settlement. In 1967 32 low-rental units were air lifted to the community from Churchill and erected during the summer. These consisted of units within each of the standard plan models 439 and 436, both of which are three bedroom dwellings. Further details on housing are given in the Appendix.

On completion of the low-rental housing the older dwellings were acquired by the co-operative and were put to a number of uses. The co-op office and craft store, laundry, bakery, and coffee shop have been housed in these dwellings, and one model 424, two-bedroom unit was converted into transient quarters/staff residence for the use of departmental personnel and visitors.

As with the other settlements, basic furniture, and hydro when installed are included in the rent structure with heating fuel, water and garbage-collection services. Average monthly rental rates for the community is approximately \$23 per dwelling.

The houses at Pelly Bay have been constructed on gravel pads, which, apart from providing a firm base for the unit, also act as a filtering device for effluent until a utilidor system has been constructed. In the meantime, more effective use can be made of the gravel pads by using rock and gravel fill to extend the levelled off areas around the houses to prevent surface accumulation of water.

In general, it may be said that the Eskimo housing in this settlement is well above the standards found in Spence Bay and Gjoa Haven, and in many ways is superior to much of the rural and urban housing in the south.

D.I.A.N.D. proposed expenditures for this community for the next five-year period includes \$70,000 for a third classroom, \$100,000 for an additional 8 three-bedroom houses, and \$35,000 for an additional garage/warehouse. A nursing station complex to be erected by D.N.H.W. will require the expenditure of \$411,000 in plant and equipment.

Commercial Institutions

The main commercial centre is the Koomiut Co-operative. This agency came into being in August, 1966.*

The structure of the co-operative is similar to that of other co-operatives in that it is composed of a paid-up membership held at the minimum of one share per person. An election board of directors is responsible for the formulation of policies executed by the manager of the enterprise.

* Eskimo co-ops are made possible through the availability of loans from the D.I.A.N.D. Loans are limited to \$50,000 for the acquisition of buildings, stock, equipment, etc., to enable the enterprise to be launched. Additional loan funds are available depending on the measure of progress made by the agency and its capacity to assume an expanded debt.



PLATE XIII - Koomiut Co-operative complex



PLATE XIV - Manager and clerk of the co-operative pricing items
in the handicraft store

The Koomuit Co-operative has a dual structure in that it is both a consumer and producer agency. The former consists of a retail store, which is the only outlet for general merchandise in the community. The latter is concerned with the production of Eskimo arts and crafts, such as carvings, traditional Eskimo artifacts, and wearing apparel. A small number of these products are sold locally to visitors and the remainder marketed through Canadian Arctic Producers ** and other retail outlets in the south.

The contractual services provided for the community constitute a substantial portion of the income of the co-operative. Another source that was initiated last year was a small commercial fishing operation from which the coarse fish was retained for domestic use and the rest was sold at Yellowknife. The co-operative has also been making efforts to develop the tourist potential of the area. Three tent-frame structures have been erected that will be extended and implemented through the addition of other facilities and equipment.

This co-operative affects the livelihood of every Eskimo family in the settlement. For seven people it is the only source of wage employment, for others it is a large contributor to income through the purchase of handicrafts and garments. Other benefits accrue through the price structure of the goods sold in the store. The intangible rewards of the co-operative occur in the social, educational and psychological spheres. It is the one organization through which the Eskimos retain an identification and maintain some control over their economic affairs.

Community Clubs & Recreational Facilities

Until the construction of the low-rental housing in 1967 there were no community organizations of any sort; in that year a four-member Housing Authority was elected. This group is responsible for determining and collecting rents, maintaining records of these transactions and investigating complaints. They also fulfill a supervisory role to ensure reasonable care and maintenance of dwellings, and to minimize the distribution of litter around the houses. Members of the Housing Authority are paid a yearly fee that is scaled to the number of houses under their jurisdiction.

Recreational activities in this settlement have in most instances occurred through the instigation of school principal who had not only made the classroom available once a week for an activity night for adults, but encouraged the people to hold dances, sports activities and movies.

During the summer of the survey the adults in the settlement were in the process of remodelling a building acquired from a DEWline site, to provide office space for the co-op, a kitchen-catering area and a hall large enough to accommodate the sports and other recreational activities of the community. During our stay in the settlement an eight member committee was elected to draw up the constitution and by-laws for a recreation association, and to develop a calendar of events that would encourage community interest and participation.

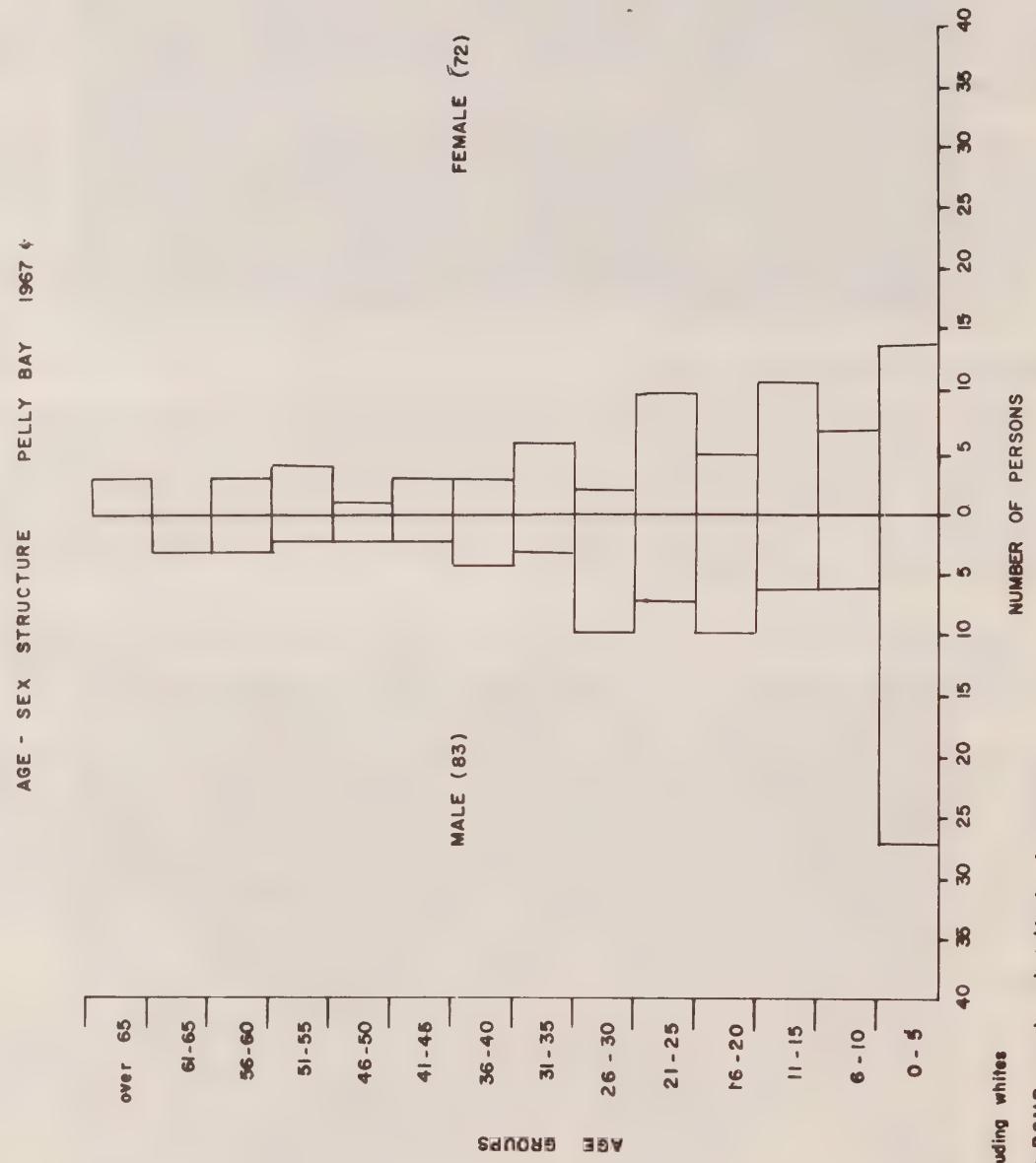
Population

The Eskimo population of Pelly Bay at the close of 1967 was 155 persons. The distribution of the population by age and sex is given in Figure 28. Structural characteristics for this population are similar to the other two settlements with approximately 45 per cent below the age of 16, 78 per cent 35 years and under, and 3.8 per cent over the age of 60 years. In this community also there is a marked imbalance in the number of males to females in the 0.5 age group.

Whatever changes have occurred in this group have been a result of natural increases rather than of migrations. The flow of people in or out of this group has been due to the Code of eligible males in the community. In the spring of 1968 one family moved to Spence Bay and one man from Gjoa Haven who married a local girl remained in the community.

** This agency is sponsored by the federal government to assist retailing arts and crafts produced by Eskimos.

FIGURE 28



Unlike the other two settlements, the people of this area developed a sedentary pattern of living in a large group. Permanent camp grounds ceased to exist for some time prior to the housing development in 1967, and it would appear that even summer fishing-sealing camps are on the decline.

Vital statistics for this settlement have also been included in those given in Table 18.

Chater 5

THE ECONOMY

Introduction

When researching data for this report the survey was confronted with a variety of methods for the recording of data and variations of fiscal years. For these reasons it became necessary arbitrarily to select a period of time within which to relate material. The twelve-month period January to December 31, 1967, seemed to offer a period that was neither too out-of-date nor so recent that the material would require constant updating to keep pace with acquiring changes.

This section of the report will be dealt with in three parts.

Part 1 Consists of an outline of the changes which have occurred in the economic process.

Part 2 A general discussion of capital resources.

Part 3 An outline of the economies of each settlement. This section relates only to Eskimo income.

Eskimo family income and household income refers to gross family or household income before statutory deductions. Gross community income covers income from all sources prior to deductions.

Part 1

Evolution of the Economy

In this region, whalers played an insignificant part in affecting the traditional self-contained hunting-gathering economy. The establishment of a Canalaska trading post was the first introduction to a quasi-commercial economy. Although sources of income were more limited, the purchases considered necessary for adequate living were also modest.

The hunting-trapping economy of the Arctic is subject to rapid and not easily predictable fluctuations. The price of raw fur is dependent upon the world market and can change rapidly. The seasonal abundance of faunal species can vary as seasonal migration habits change. Another factor that impinges on an Arctic hunting-trapping economy is the weather. Fur prices might be high and the animals available within the range of the individual but inclement weather can delay a harvest until predators have destroyed the catch.

Wage labour provided a means of being able to implement monetary resources, but by accepting wage employment and money as a means of satisfying need requirements the Eskimo became bound to an external economy and a rising need and desire for manufactured goods. At first the sources of employment were restricted to a small number of people hired on either a permanent or casual basis by the traders, the missions and the police. Opportunities for wage earnings have escalated through an increase in the number of people have had to become increasingly dependent on store-bought products as wage employment has impinged on the amount of time available for harvesting the natural resources. Consumption patterns expanded with the rising levels of cash income which has reached a wider audience through the vehicle of statutory allowances. Today there are few, if any, families without equipment that have been produced by an industrialized society, and they have, as well, become relatively large consumers of western-type foods and clothing.

The predictable return from wage earnings in comparison to the uncertainty of the income from trapping has been one of the factors that has made wage employment a desirable means of meeting the changing level of needs. That employment opportunities occurred in the settlements was one factor that added to the positive values of living in a larger community and the winter hunting-trapping cycle coincided nicely with summer construction projects. As permanent employment has increased, the desirability of a

larger, more stable cash income that could be earned under less rigorous circumstances may have gained the popularity so that other avenues which offer a means of increasing earnings are also regarded favourably.

At Gjoa Haven and Pelly Bay, where the opportunities for wage employment are more restricted than at Spence Bay, the development of the local co-operatives has met with a response that is lacking at Spence Bay. At both settlements the figures for wage earnings are typical of previous years, insofar as both co-operatives were established just prior to the period that the survey covers, and in the process, have created additional permanent jobs. Unless unforeseeable developments occur the employment figures for Gjoa Haven, given later in this chapter, are more representative of levels of employment as they are likely to be for some time. One event that affected the income pattern at Pelly Bay was the building boom in 1967, which boosted the wage earnings of the population out of all proportion to what they normally are. In the post-boom period of 1968 employment levels in this settlement had increased only to the extent that job opportunities had been created by the co-op.

In summary, the rising levels of wage employment in the last five years or so have brought the Eskimos of this area closer to a full cash economy. These people have come to depend on manufactured articles and upon a southern-based economy for the provision of employment. With rising levels of handicraft production for resale, or industrial or tourist projects that develop, the economics of the settlements will be further tied to southern markets.

It would appear to be desirable that the quicker these Eskimos assume the management of their available resources, the quicker they can determine the direction of their future.

Part 2

Capital Resources and Investment

Introduction

To view the economics of the settlements in their proper perspective some mention must be made of the differences between actual and real income as they apply to northern communities. It has not been possible to impute equalizing values to the factors discussed below, due primarily to an inability to obtain reliable estimates of country food harvested, and to arrive at a formula by which to assess the value of such things as no-interest credit facilities, low-rental housing, services, utilities, treatment services, and medical facilities.

Country Food

The availability of country food is an important economic factor in the life of the Eskimo that is not reflected in this treatment of the economy. Observers* have made widely differing estimates of the Eskimo's consumption of country food, and the Eskimos themselves could not give accurate estimates of this, or of the size of the harvest of various species of fauna.

Estimations of the monetary value of country food have been made by various sources, but in the absence of figures giving the magnitude of the harvest it has not been possible to evaluate the proportion that this form of income represents in the real economy of the communities.

Low Rental Eskimo Housing

A five-year rental program was set up in 1965 by the D. I. A. N. D. Housing units obtained under an earlier purchase plan were to be repurchased by the Department, the purchase price would be for the amount of the Eskimo's equity less 2 per cent of the original value of the house for each year of occupancy.

These units were to be replaced, where necessary, and housing implemented by low-rental dwellings. Determination of rent was based on the C. M. H. C. formula for crown-owned housing in the North, the three applicable categories are:

- (a) Permanently employed individuals pay a rental equivalent of 20 per cent of the family income to a maximum of \$67 per month.
- (b) Recipients of old age pensions, disability pensions, social assistance, and those unemployed due to poor economic conditions pay \$2 per month.
- (c) Included in this category are those who cannot be placed in either of the above. The determination of rent involves an estimation of possible income with built-in mechanisms for write-off or carry-over of arrears in rent.

As stated earlier, rental agreements include the provision of fuel oil, (electricity where available) water, and garbage collection services.

Loan, Credit, and Saving Facilities

All three facilities are available through the Hudson's Bay Company stores and through the co-operatives. Through the H. B. C. store revolving credit facilities are extended at no interest. Credit is extended for purchases at the store up to a level which is based on an individual's record of earnings and reliability. Loans for expensive items such as ski-dos, canoes, and outboard motors are made on the basis of 60 to 75 per cent cash, with the payment of the balance spread over a period of time. The sums outstanding are also interest free.

To improve the Eskimos' economic circumstances low interest loans are also obtainable by them from the federal government in primarily two forms. The Eskimo Loan Fund, the purpose of which is to assist individuals or groups of Eskimos to purchase (or repair) tools, equipment, materials or buildings, to set up a small business, or to purchase food and camping supplies, or to form a co-operative association. Repayment of principle, together with interest of 5 per cent per annum on the unpaid balance are staggered to effect repayment of the sum within a period of five to 10 days.

The Small Boats Assistance Fund has enabled Eskimos either singly, or as a group, to acquire boats to be used in hunting or fishing on the basis of a 20 per cent equity augmented by a 40 per cent grant and a 40 per cent loan. The maximum allowable under this grant is \$9,000, which would allow for the purchase of a \$23,000 vessel. Terms of repayment of the loan is determined by the Eskimo Loan Fund.

Savings facilities are available not only through the two commercial agencies but at Spence Bay through the post office. In none of the settlements were these facilities used even by permanently employed individuals. It would appear to be a concept that is foreign to the economic perspectives of the Eskimos of the region to whom a money economy is a recent introduction.

Capital Investment

This will be dealt with on the basis of individual and corporate investment.

Capital Investment of Individuals

This can be divided into the sub-sections of investment capital and domestic capital. The former can be described as working or producer capital that is invested in income generating equipment. In these settlements this would comprise rifles, boats, motors, traps, nets, tents, and such like. Dog-teams and protective clothing should, by rights, be included under this heading, but for present purposes the cost of home-made skin clothing will be omitted.

Average Costs of Basic Income Generating Equipment

An average price based on those of the settlements is shown in the list below, giving a rough idea of what it would cost to outfit a hunter-trapper in this region.

Equipment	Average Price (dollars)	Total (dollars)
200 traps, size 11/2	1.50 each	300.00
1 .22 rifle	35.00 each	35.00
1 30.30 rifle	110.00 each	110.00
10 22 ammunition	1.15 per box	11.50
4 30.30 ammunition	5.80 per box	23.20
1 canoe - 20'	650.00 each	650.00
1 outboard motor - 10 hp	450.00 each	450.00
1 tent	50.00 each	50.00
1 komatik		200.00
7 dogs	25.00 each	175.00
dog harness		50.00
2 fish nets (3 lbs.)	25.00 each	50.00
Total		2,104.70

With the average price of a ski-doo being \$850, gasoline costing \$1.50 a gallon, and oil 85 cents a quart, at least an additional \$1,200 is required if a hunter is to be mechanized. As one of the important factors associated with capital goods in general is the relatively poor care and maintenance these receive, it is questionable whether returns from harvest would increase to the extent that mechanization is profitable if vehicles deteriorate to the extent of requiring replacements every two years.

The sum of \$2,104 would appear to be beyond the means of the average hunter-trapper, particularly the youth just leaving school. But as a rule males start to acquire equipment from a fairly young age through donations from older members, purchase, or fabrication, and in this way gradually build up an outfit. To some extent sharing patterns exist especially in regard to the more expensive equipment such as marine craft, dog-teams, and komatiks. Adult hunters in an extended family unit commonly pool financial resources to obtain these items.

As estimated, evaluation of investments on harvesting equipment for Spence Bay and the surrounding camps has been given in Table 22. To some extent the figures are distorted, as evaluations are based on replacement costs. If it can be assumed that this equipment is owned and used by males over the age 16 then the per capita investment in equipment for this group comes to approximately \$856.

Domestic Capital

This category covers such things as housing, furniture, and domestic apparatus. Eskimo housing has already been discussed, and the few dwellings built by Eskimos are scrap shacks which are totally inadequate for habitation. This situation was rectified in Pelly Bay in 1967 with the construction of low-rental housing for all Eskimo families, and was in the process of being remedied at Spence Bay and Gjoa Haven by the number of housing units that had been delivered to both communities during the summer of 1968.

The quality and quantity of household furnishing varied within a fairly wide range, income due to differences that resulted from people being permanently employed or not. Some domestic chattels are supplied with the new low-rental housing, that should considerably improve the over-all standard. As time did not permit making an inventory of household items it is not possible to assess the level of expenditures in this category.

Capital Investment of Agencies

To be able to present a brief outline of capital investments, some estimates have had to be made. In some instances these have been based on existing evaluations given for similar types of plant in communities comparable to those in the survey area. In others, replacement costs have been the only indices available.

Capital investments have originated in both the government and private sectors. Unlike a number of other northern communities the private sector in these settlements did not initiate community services that could later be purchased or implemented by federal agencies, and in these communities the nature of the investments have largely determined the source. Administration, education, housing, law enforcement, and medical services were originated by government departments responsible for these fields, with commerce and religion initiated by the private sector.

The résumé of capital investments for Spence Bay given below represents the totals of the capital values assigned to investments from all sources as they existed at the end of 1967. In these settlements, with the exception of the co-operatives and H. B. C., the investments made by agencies are, for the most part, of a non-productive kind that is distributed over such items as accommodation, service equipment, warehousing, and other items necessary to meet the needs of increasing urbanization. With the co-operatives and H. B. C. (and to a lesser extent the individual), a large part of their investment is in buildings and equipment used for income generating purposes.

TABLE 26

Résumé of Capital Investment by Source
Spence Bay, 1967

	Dollars
Government	1,199,395
Private	
H.B.C.	125,000
Anglican church	65,000
Catholic church	80,000
Eskimo	
Individual harvesting equipment and housing for Spence Bay and camps	84,394

Sources of Income

Four main sources of income in this area are wages, hunting-trapping, social legislation, and welfare. A less important source of income occurs from the sale of handicrafts. At Spence Bay, so little carving was done that the cash income from the sale of handicrafts was a little less than 1 per cent of the total money economy.

PART 3

Economy of the Settlements

Spence Bay

Labour Force and Wage Employment

The number of Eskimos in the labour force (16-65 years) in the settlement at Spence Bay at the end of 1967 was 71 men, 68 women. The people in this age group for the camp populations was 18 men and 14 women. The combined figures are well in excess of the number of jobs available in, or near, the community.

During the summer and fall of 1967 and 1968 a number of Eskimos from the settlement and camps were employed by the Great Slave Lake Railway at Roma Junction. This implemented the local demands for casual labour which are not numerous enough to absorb all the employable males.

Permanent Employment

Table 27 gives the number of permanent jobs available in the settlement. As the Area Administrator at Spence Bay is an Eskimo from the Western Arctic, and is as much of a transient in the community as the white population, he is included in this category in the Table to avoid distorting employment figures for the local people.

Of the 27 permanent jobs available in the community half are filled by local Eskimos. With the exception of the Area Administrator, jobs requiring specialized skills are filled by whites and those for semi-or unskilled labour are filled by the Eskimos. The one individual shown as a contractor held contracts for the fuel and water delivery services which were carried out with the use of Department of Indian Affairs and Northern Development equipment.

Casual Labour

Casual labour tends to be seasonal. From spring to the early part of the winter casual employment is sporadic and confined to construction or community development projects. In the fall, a large proportion of men are employed for two to three days unloading the supply ship and unless building supplies are air lifted in, construction programs occur after materials have been unloaded off the boat. As a rule, demands for casual labour vary annually with the amount of government-sponsored projects. The demands from sources external to the community, such as the Great Slave Lake Railway, provided an additional avenue for wage earnings. Ten men from Spence Bay and one from Thom Bay took advantage of the opportunity and earned from around \$800 to \$6,000 during their period of employment.

TABLE 27

OCCUPATIONS AND PERMANENT EMPLOYMENT BY ETHNIC GROUP AND SEX
SPENCE BAY AND CAMPS, 1967

Occupation	WHITE		Occupation	ESKIMO	
	Number Male	Employed Female		Number Male	Employed Female
Area Administrator	1		I.A.N.D. Clerk	1	
I.A.N.D. engineer	1		R.C.M.P. Special constable	1	
R.C.M.P. Officer	2		Teaching assistant		1
Teacher	1	2	School janitor	1	
Missionary	2		School cook		1
Store clerk H.B.C.	1		Nursing station janitor	1	
Nurse		2	Nursing station maid		1
Total	9	4	Community health worker	1	
			Lay Dispenser at Tom Bay		1
			Store Clerk H.B.C.	1	1
			Contractor	1	
			Northward Aviation Ltd.	1	
			Total	9	5

TABLE 28
SEASONAL AND CASUAL EMPLOYMENT OF ESKIMOS
SPENCE BAY AND CAMPS, 1967

Employer	Male	Female	Total
Department of Indian Affairs and Northern Development	48	1	49
Canadian National Telecommunications	1		1
Great Slave Lake Railway	11		11
Hudson's Bay Co.	12		12

TABLE 29
INDIVIDUALS TRADING FURS DURING A MONTH, 1967
SPENCE BAY

Number of Fur Sales Per Individual	Number of Individuals Selling Furs											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	16	29	16	12	14	12	13	8	18	8	18	13
2	16	6	15	9	14	3	2	7	4	4	11	5
3	4	6	8	14	2	1	2	1	3	—	4	10
4	2	—	1	6	3	—	—	—	—	—	3	3
5	1	—	2	8	—	—	—	—	—	—	1	—
6	—	—	1	2	—	—	—	—	—	—	1	—
7	—	1	—	—	1	—	—	—	—	—	1	—
TOTALS	39	42	43	51	34	16	17	16	25	12	39	31

TABLE 30
INDIVIDUALS TRADING FURS DURING A MONTH, 1967
THOM BAY AND OUTLYING CAMPS

Number of fur Sales per Individual	Number of Individuals Selling Furs											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	8	5	6	4	3	6	4	1	1	—	5	5
2	3	1	6	—	3	3	—	1	—	1	2	1
3	—	2	1	2	4	—	—	—	—	—	—	—
4	1	—	—	—	—	—	—	—	—	—	—	2
5	—	—	—	1	—	—	—	—	—	—	—	—
TOTALS	12	8	13	7	10	9	4	2	1	1	7	8

TABLE 31
DISTRIBUTION OF GROSS INCOME
SPENCE BAY (excluding camps)
January – December 1967

Source	Value (dollars)	Average Household Income (dollars)	Total Income by Percentage
Earned			
Wages	84,890	1,846	58
Fur sales	16,483	358	11
Handicrafts	863	18	1
Sub-total	102,236	2,222	70
Unearned			
Family allowance	10,047	218	6
O.A.P., O.A.S., and disability allowance	12,204	265	9
Social assistance	21,302	463	15
Sub-total	43,553	946	30
TOTAL INCOME	145,789	3,168	100

TABLE 32
DISTRIBUTION OF GROSS INCOME
THOM BAY & OUTLYING CAMPS
January – December 1967

Source	Value (dollars)	Average Household Income (dollars)	Total Income by Percentage
Earned			
Wages	7,357	567	35
Fur sales	9,244	712	44
Handicrafts	115	8	1
Sub-total	16,734	1,287	80
Unearned			
Family allowance	1,918	148	9
O.A.P., O.A.S., and disability allowance	1,284	99	6
Social assistance	1,124	86	5
Sub-total	4,326	333	20
TOTAL INCOME	21,060	1,620	100

Despite a number of drawbacks to this scheme, almost as many men went out to Roma Junction again in the spring of 1968. In 1967 periods of employment with the Great Slave Lake Railway have ranged from six weeks to seven months. Seven of the men returned home in less than 2 1/2 months. Stevenson (1968) has given an extensive discussion of this project and presented a number of possible causes for the high turnover of Eskimos in southern jobs. Homesickness, long hours of work, and the heat were some of the most recurring causes for termination of employment that were mentioned to this survey team. It also appeared that misinterpretation might have resulted from the unfamiliarity of these people with culture patterns with which they have had little or no contact.

Table 28 shows the agencies and number of Eskimos having casual or seasonal employment for both Spence Bay and the surrounding camps for 1967. During the summer some of the men from Thom Bay obtain casual labour at Spence Bay. During 1967 the Department of Indian Affairs and Northern Development employed seven out of 48 men on a casual labour basis from Thom Bay. Six of these were employed at Thom Bay constructing an ice cellar, the other obtained employment in the larger settlement. Annually, the Department of Indian Affairs and Northern Development employs the largest number of people on a casual labour basis.

At Spence Bay a large proportion of the men are employed for two-three days unloading the supply ship. From spring to the start of winter casual employment is sporadic and confined to construction or community development projects. Unless building supplies are air lifted in, construction programs tend to occur later in the year when materials have been unloaded off the boat.

Hunting and Trapping

The number of general hunting licences issued in the Spence Bay area for the 1967-68 season were 82 for the settlement and 21 for the camp populations. Tables 29 and 30, give some indication of the number of people actively trapping. The Table for Thom Bay, to some extent, also provides a measure of the amount of travelling that occurs between the camps and settlement.

Table 31 indicates that for Spence Bay the income from fur sales amounted to \$16,483 or 11 per cent of the total income available to Eskimos. For the camps (Table 32) this amounted to \$9,244 or 44 per cent of the total income available to camp Eskimos. Table 32 also indicates that the per capital fur income of the camp groups Eskimos is double that of the settlement dwellers.

Table 29 & 30 indicate that for Spence Bay, April was the month in which most of the fur sales occurred, while March was the peak trading period for the camp groups. The number of individuals trading furs during these two months represents roughly 81 per cent and 56 per cent of the licence holders in the two groups.

Unearned Income

Extremes in unearned income for various households ranged from \$360 to \$4,213. The average per household is \$946 which represents 30 per cent of the gross household income. The total unearned income from all sources amounted to \$43,553, with social assistance accounting for almost half of this sum.

Twelve people were in receipt of social security payments and disability pensions. These people were distributed through 10 households and their income in six of these cases represented the only (or major) cash income of the household.

The unearned income for Thom Bay and the outlying camps amounts to \$4,326 or 20 per cent of the total gross income of the groups (see Table 32). The largest proportion of this is derived from family allowances. In comparison to the people in the settlement, the proportion of social assistance in the gross income of the camp dwellers is one-third of that of the people in the settlement. From discussions with the Area Administrator it appeared that camp dwellers received social assistance periodically when they came into the settlement, or in the form of supplies and equipment when an aircraft was going out to their camps.

Income from Handicrafts

The arts and crafts industry is not organized in this area. A negligible amount of carving is done and a few fur items of clothing are fabricated for resale. Some of these products are sold to the white population, but the Department of Indian Affairs and Northern Development is the principal purchaser of handicrafts.

In 1967 a little less than one per cent of the gross income of the Spence Bay area was derived from the sale of handicrafts, and there is no doubt whatever that production of these items can be expanded in the settlement and camps to the Eskimos' advantage. During 1968 the D. I. A. N. D. had a handicraft development officer stationed in Spence Bay to encourage and assist the Eskimos to develop their skills in this field, and to examine ways of forming a co-operative through which to market the products.

Community Gross Income

The proportions and sources of cash income for both Spence Bay and the camp groups are presented in Figures 29 and 30. From these two diagrams and the accompanying Tables it can be seen, that for the settlement dwellers, wage earnings have been the major source of income whereas for the camp groups the emphasis has been on trapping and hunting. In fact, had it not been for the wage earnings of one man from Thom Bay (Tables 35 and 36), who spent the summer working for the Great Slave Lake Railway at Roma Junction, the income from fur sales for the camp groups would have accounted for almost the entire source of earned income, and the unearned income would have amounted to a little over a third of the gross income of these groups.

The income from wages and social assistance are more readily available to the Thom Bay people who are able to make frequent journeys into Spence Bay. While the average household income for the camp dwellers, from wages and social assistance, is one-third of that of the settlement dwellers, their income from fur sales is double that of the latter.

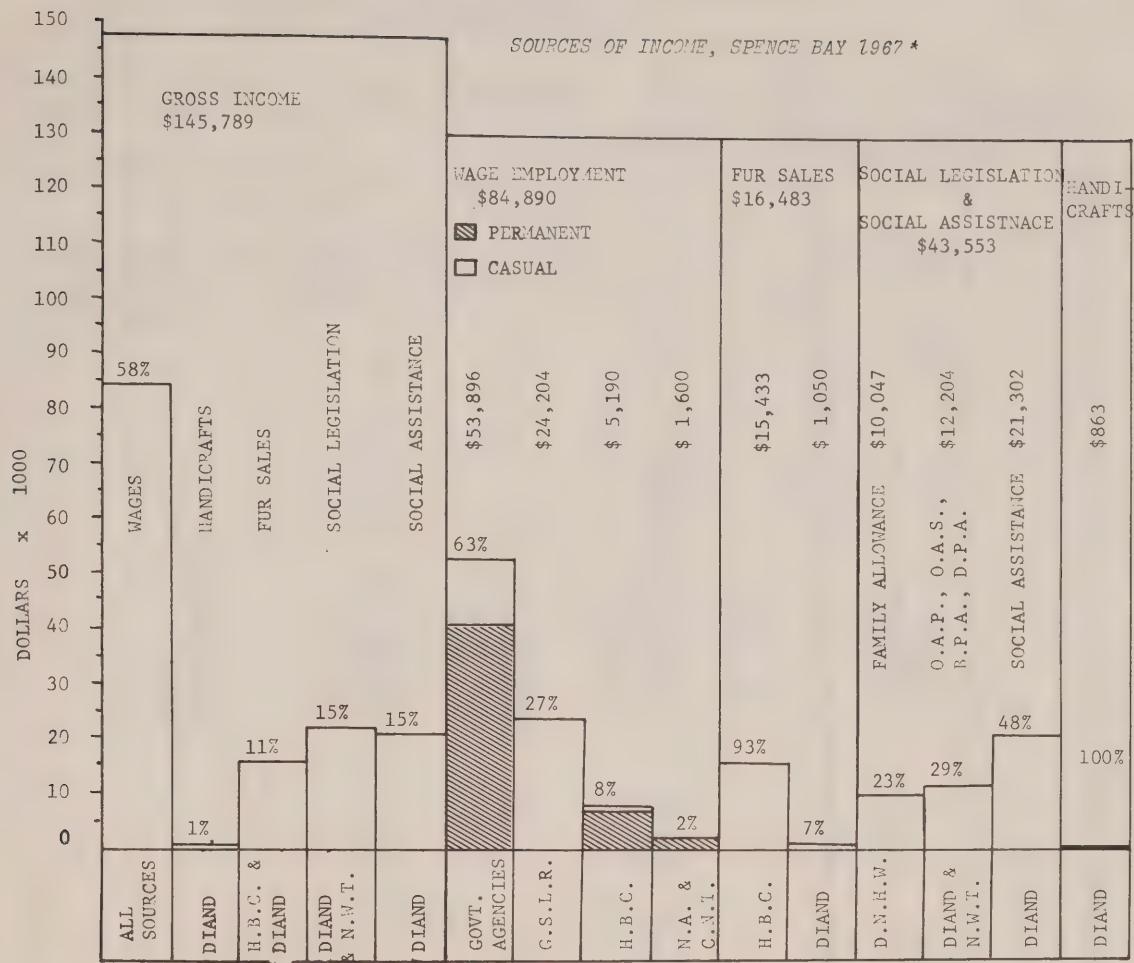
The proportion of the earned income for both groups would have been less had it not been for the earnings of the men who worked for the Great Slave Lake Railway. This is again reflected in Table 34, from which it can be seen that eleven households had a cash income of \$5,000 and over, whereas in fact, only six of the permanent jobs in the settlement were in this category. Table 34 also indicates that more than half of the households in the settlement had gross incomes under \$2,000 and this proportion would have been larger had it not been for the employment provided by the Great Slave Lake Railway.

The one additional source of wage employment has altered the income pattern of the settlement from one of a small number of permanently employed people with relatively high incomes, in a community with a broad base of minimal employment and very low incomes, in a community with a broad base of minimal employment and very low incomes, to one in which the imbalance had been reduced by almost 25 per cent. The relationship is shown in the Figure 29 which gives the sources of income.

In summary, one additional source of employment in 1967 increased the gross income of the settlement group by 27 per cent and accounted for almost all the wage income of the Thom Bay group. Future sources of employment will have to be developed locally and externally to the settlement. The latter is one means of rapidly increasing income levels, without requiring capital investments in plant and equipment. It can also provide a source of gainful employment for a large proportion of the men at a period when they are not hunting and trapping, but on a long term basis other solutions will have to be examined.

It appears that not only are the camp groups located in less intensively trapped areas, but they are more active trappers who depend on this source of cash income. Due to their locations they have less access to the administrative source of social assistance, and by being free of the restrictions of wage labour they have more time in which to trap and hunt. The cash income of the camp household is half that of the average household in the settlement. The distance of the former from the retail outlets at Spence Bay would also appear to make them less dependent on store-bought food, which to some extent decreases their need for money.

FIGURE 29

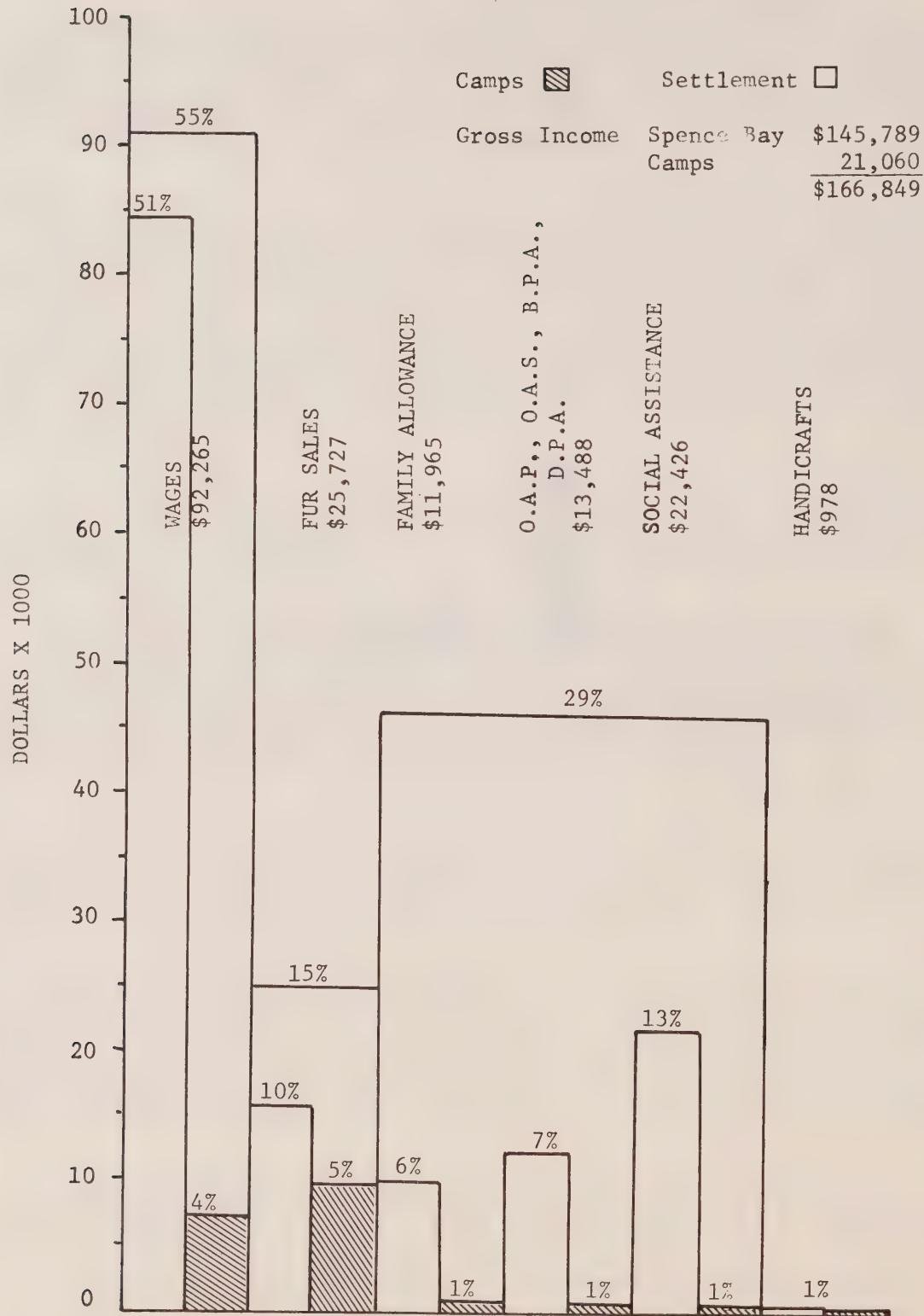


* These figures are for the settlement residents only.

FIGURE 30

COMBINED GROSS INCOME FOR
CAMP & SETTLEMENT GROUPS

SPENCE BAY 1967



DIS

TABLE 33
DISTRIBUTION OF GROSS FAMILY INCOME
SPENCE BAY, 1967

Household Number	Persons		Wages (dollars)	Handicrafts (dollars)	Fur Sales (dollars)	Social Legislation (dollars)	Social Assistance (dollars)	Total (dollars)
	Adult	Child						
1	2	3	342	93	146	144	180	905
2	2	3	—	—	350	240	—	590
3	2	4	49	—	339	384	493	1,265
4	2	2	149	—	509	144	542	1,344
5	3	4	6	—	103	1,572	222	1,903
6	4	2	49	68	409	188	634	1,348
7	2	3	292	127	412	264	851	1,946
8	2	3	—	—	510	212	707	1,429
9	2	4	3,000	12	394	360	30	3,796
10	2	4	—	—	289	312	991	1,592
11	6	3	176	7	708	2,712	1,501	5,104
12	2	3	249	—	145	216	432	1,042
13	1	—	—	94	—	900	631	1,625
14	4	6	8,176	—	164	504	—	8,844
15	4	1	1,611	—	296	96	1,054	3,057
16	3	2	2,707	38	99	144	773	3,761
17	3	4	874	65	512	376	316	2,143
18	3	1	—	64	12	144	826	1,046
19	2	2	278	10	83	144	611	1,126
20	2	3	5,588	—	46	216	—	5,850
21	2	2	340	74	380	176	415	1,385
22	4	3	3,934	—	1,398	240	5	5,577
23	3	2	373	—	1,033	144	445	1,995
24	4	8	8,989	—	20	376	—	9,385
25	3	1	—	7	429	72	687	1,195
26	3	2	—	3	319	972	1,158	2,452
27	4	4	2,180	—	520	1,340	363	4,403
28	2	—	100	—	416	900	178	1,594
29	2	1	184	—	112	912	94	1,302
30	3	1	1,205	9	409	12	586	2,221
31	2	5	563	26	38	312	856	1,795
32	5	3	5,746	—	600	240	818	7,404
33	5	6	2,339	27	38	552	1,765	4,721
34	4	3	61	—	96	315	406	878
35	3	3	7,054	—	1,090	288	25	8,457
36	6	1	7,995	15	350	1,356	93	9,809
37	3	2	1,462	73	202	188	268	2,193
38	3	3	114	—	497	144	928	1,683
39	4	5	6,000	—	192	408	—	6,600
40	3	6	5,000	33	32	384	40	5,489
41	3	3	4,850	—	288	1,524	—	6,662
42	2	3	1,496	10	470	216	409	2,601
43	2	3	432	—	461	240	303	1,436
44	3	4	927	—	1,125	312	241	2,605
45	3	—	—	—	—	1,284	137	1,421
46	3	1	—	8	442	72	288	810
TOTALS			84,890	863	16,483	22,251	21,302	145,789

TABLE 34

**COMPOSITION AND GROSS CASH INCOME OF HOUSEHOLDS
SPENCE BAY, 1967**

Composition of Households		Under \$500	\$500-900	\$1,000-1,999	\$2,000-2,999	\$3,000-3,999	\$4,000-4,999	\$5,000±
Adults	Children							
1	—			1				
2	—			1				
2	1			1				
2	2			3				
2	3		2	4	1			1
2	4			2		1		1
2	5			1				
3	—			1				
3	1		1	2	1			
3	2			1	2	1		
3	3			1				2
3	4			1	2			
3	6							1
4	1					1		
4	2			1				
4	3		1					1
4	4						1	
4	5							1
4	6							1
4	8							1
5	3							1
5	6						1	
6	1							1
6	3							1
TOTALS			4	20	6	3	2	11

TABLE 35
DISTRIBUTION OF GROSS FAMILY INCOME
THOM BAY AND OUTLYING CAMPS, 1967

Location	Family Number	Persons		Wages (dollars)	Handicrafts (dollars)	Fur Sales (dollars)	Social Legislation (dollars)	Social Assistance (dollars)	Total (dollars)
		Adult	Child						
Thom Bay	1	2	—	—	—	296	1,284	60	1,640
	2	2	1	5,451	—	63	—	—	5,514
	3	2	1	—	—	743	24	156	923
	4	2	2	29	—	749	72	45	895
	5	2	2	100	—	536	72	—	708
	6	2	2	123	—	483	144	212	962
	7	2	3	1,050	—	419	240	—	1,709
	8	2	3	65	—	603	240	—	908
	9	2	4	100	—	1,544	78	150	1,872
	10	2	5	457	—	801	376	55	1,689
Camp	1	5	6	—	—	1,061	312	116	1,489
	2	2	5	—	100	741	264	110	1,215
	3	3	3	—	15	1,205	96	220	1,536
TOTALS				7,375	115	9,244	3,202	1,124	21,060

TABLE 36
COMPOSITION AND GROSS CASH INCOME OF HOUSEHOLDS
THOM BAY AND OUTLYING CAMPS, 1967

Composition of Households									
Adults	Children	Under \$500	\$500-999	\$1,000-1,999	\$2,000-2,999	\$3,000-3,999	\$4,000-4,999	\$5,000±	
2	—			1					
2	1		1						1
2	2		3						
2	3		1	1					
2	4			1					
2	5			2					
3	3			1					
5	6			1					
TOTALS			5	7					1

With the relocation at Spence Bay of the group from Thom Bay in the fall of 1968, only three small camp groups remain in the area. How long these will continue as permanent camps was difficult to determine, but it seemed unlikely that they would not continue beyond the lifetime of the present family heads.

Pelly Bay

Levels of Capital Investment

The procedures and explanations that were applied to Spence Bay in discussing the levels of capital investment apply also to Pelly Bay. A summary of figures given earlier in the report are summarized below.

TABLE 37

Résumé of Capital Investment by Source
Pelly Bay, 1967

	Dollars
Government	615,000
Private	
Koomuit Co-operative	43,900
Catholic church	85,000
Eskimo	
Individual harvesting equipment	61,091

Labour Force and Wage Employment

The labour force in this community is composed of 44 males and 37 females who represent 52 per cent of the total population. The amount of wage employment available locally is as a rule minimal. The construction program in 1967 created more demands for labour than has probably occurred in the history of the settlement, but this has ceased with the completion of the houses.

As with the other settlements this is a labour intensive community in which the people have had the least experience of wage employment and a money market economy. Until the co-op store opened in 1967 this community had been without a local retail store at which to trade furs, with the result these people have not even had the incentive to trap extensively to implement their domestic requirements. With the limited range of merchandise available to them through mail-order catalogues (which have not always been available), the high cost of importing these goods and the inaccessibility of a postoffice at which parcels could be paid for, these people have been slow to benefit from more efficient harvesting equipment manufactured in the south.

With the recent extension of wage employment through the co-operative and additional positions with the D. I. A. N. D. consumption patterns should increase and be more readily satisfied through the co-op store. Whether this will increase incomes through more intensive harvesting with better equipment, or lead to the intensification of patterns of sharing, is difficult to predict. But it is suggested that if levels of productivity in harvesting and standards of living are to rise these people must have the opportunity through wage employment to acquire the capital with which to do it.

Permanent Employment

From Table 38 it can be seen that until the co-operative commenced to function in 1967, Federal Government agencies were the only wage employers in the community, and that five Eskimos were holding permanent jobs. Until the positions for a teaching assistant, school cook and Lay Dispenser were created in 1967 there was only one Eskimo permanently employed and he was the janitor of the school.

The co-operative has more than doubled the number of permanent positions available and even though the total wage earnings from this source were lower than that obtained from government agencies the amounts paid out in permanent employment was higher (Figure 31).

TABLE 38
OCCUPATIONS AND PERMANENT EMPLOYMENT BY ETHNIC GROUP AND SEX
PELLY BAY, 1967

Occupation	WHITE		Occupation	ESKIMO	
	Number Male	Employed Female		Number Male	Employed Female
Teacher	1		Teaching assistant		1
Missionary	2		School cook		1
Total	3		School janitor	1	
			Lay Dispenser		1
			Co-op manager	1	
			Co-op clerk	1	3
			Co-op driver	2	
			Total	5	6

TABLE 39
SEASONAL AND CASUAL EMPLOYMENT OF ESKIMOS
PELLY BAY, 1967

Employer	Male	Female
Department of Indian Affairs and Northern Development	28	2
Great Slave Lake Railway	4	
Koomiat Co-operative	1	
Total	33	2

Casual Employment

For this community 1967 was a typical period for which to depict the income from casual labour. This settlement, perhaps more than the others, is in need of local enterprises that at least provide employment during the summer and fall when people are not engaged in trapping.

As Pelly Bay does not have a shipping season during which some casual labour is required to unload supplies, the demands for casual labour had been negligible until 1967. The large proportion of wage earnings shown in Table 41 was a result of the low rental housing construction project of 1967. With the completion of this program, all that was required in 1968 was to connect up the electrical wiring of the houses and complete the hook-up to the mains, which provided employment for two men. When the extension and surfacing of the airstrip has been concluded, demands for casual labour will return to the previous level until further construction or community development programs are initiated.

TABLE 40
INDIVIDUALS TRADING FURS DURING A MONTH
PELLY BAY, 1967

Number of Fur Sales Per Individual	Number of Individuals Selling Furs											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	7	4	3	2	3	—	—	5	—	—	3	10
2	—	—	—	1	—	—	—	—	—	—	4	5
3	—	—	—	—	—	—	—	—	—	—	3	—
4	—	—	—	—	—	—	—	—	—	—	—	—
5	—	—	—	—	—	—	—	—	—	—	—	—
6	—	—	—	1	—	—	—	—	—	—	—	—
TOTALS	7	4	3	4	3	—	—	5	—	—	10	15

Number of licences issued 1966-67 – 39

Number of licences issued 1967-68 – 39

Four men from Pelly Bay went out to work on the Great Slave Lake Railway. Only one of these men stayed out any length of time apparently to save enough money to re-establish himself when he moved to another community. Apart from the other disadvantages of having to be employed outside the home community, the people of Pelly Bay have probably had the least exposure to the job requirements associated with wage employment. Their unfamiliarity with these processes in all likelihood only serves to intensify anxieties and homesickness to the point where they are unable to cope with the pressures. By being able to develop levels of sophistication through continued exposure to the wage employment situation (both in the settlement and at centres external to it) it might be possible fairly rapidly to assist these people to become accustomed to a cycle of migration in which they are able to substantially increase their earnings. The wage earnings of the three men who returned to Pelly Bay added 10 per cent to the gross cash income of the community for the year.

Hunting and Trapping

During the hunting-trapping season 1967-68, 39 general hunting licences were issued in Pelly Bay. The community income from fur sales for 1967 was \$2,454 representing 4 per cent of the total income available to Eskimos which on a household basis averages out to \$72. On the basis of the number of licences issued the amount would be slightly less, as there are households in which there are more than one adult male. Table 40, however, indicates that the number of individuals selling fur in December amounted to 38 per cent of the licence holders and that the proportions were less for the other eleven months.

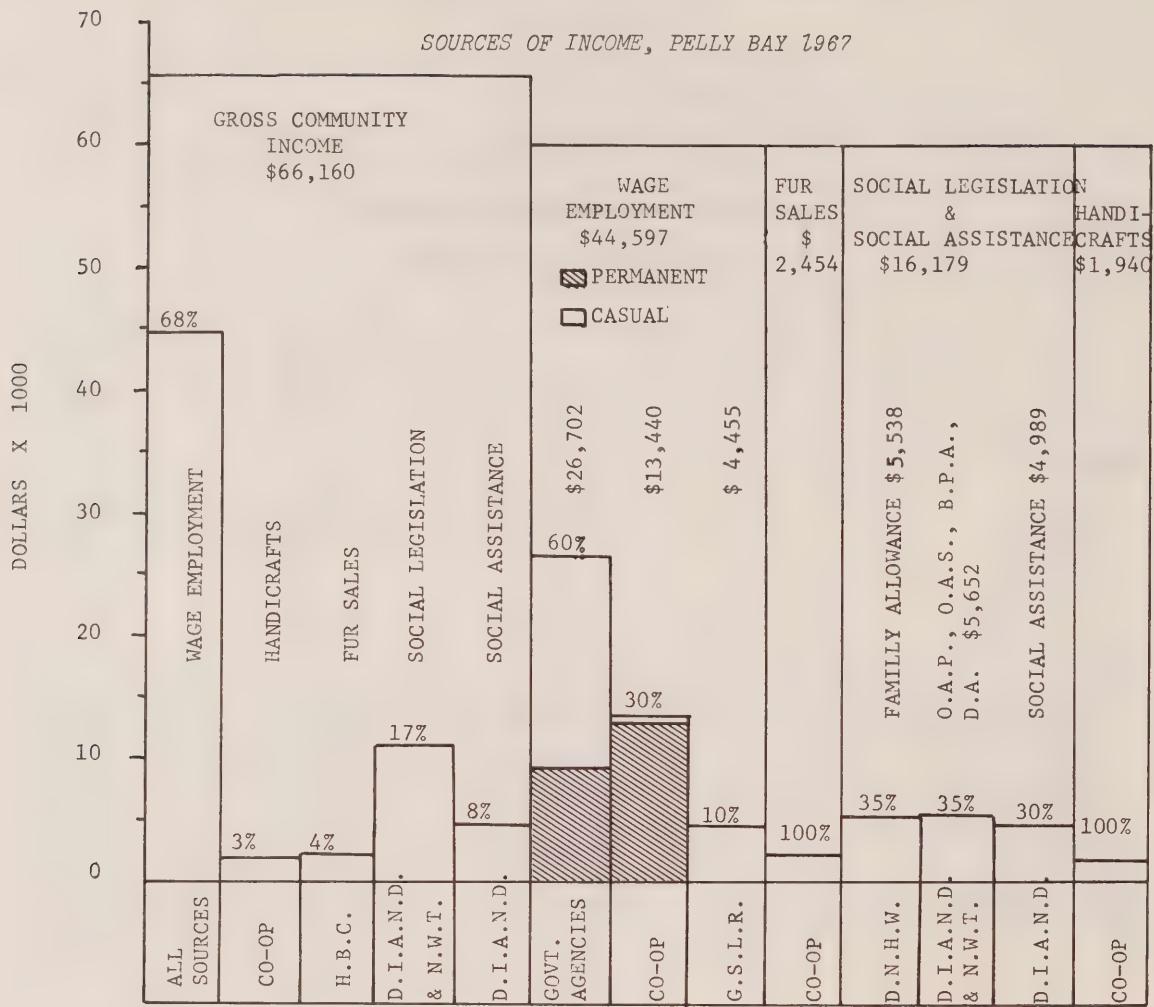
Despite having the lowest income per household from wages, these people do not appear to exploit the faunal resources more extensively to obtain additional resources. Without a local fur buyer and a retail outlet both motivation and goal attainment stimuli appear to have been absent. Like the camp groups these people have not had either the opportunity to develop a more extensive range of consumer demands through exposure, or the avenues through which to satisfy need requirements other than those provided by the immediate environment.

Hunting, rather than trapping, appears to have provided a broader base for the natural resource harvesting portion of the subsistence economy. The average of the reported caribou take is higher for this settlement than that for Spence Bay, while that for seals is lower. It could be suggested that at Pelly Bay seals are harvested less intensively, as these animals are of little value beyond that of domestic consumption,

TABLE 41
DISTRIBUTION OF GROSS INCOME
PELLY BAY, Jan – Dec 1967

Source	Value	Household Average Income	Percentage of the total Income
Earned			
Wages	\$44,597	\$1,311	68
Fur Sales	2,454	72	4
Handicrafts	1,940	57	3
SUBTOTAL	\$48,981	\$1,440	(75%)
Unearned			
Family Allowance	\$ 5,538	\$ 163	8.5
O.A.P., O.A.S., and			
Disability Alice.	5,652	166	8.5
Social Assistance	4,989	146	8.0
SUBTOTAL	16,179	475	(25%)
TOTAL INCOME	\$65,160	\$1,984	100%

FIGURE 31



whereas at Spence the animals are also harvested for the value of the skins. The differences in the caribou take of the two communities might also be affected more by the availability of both money and a store at which to purchase food, and the larger amount of wage labour available at Spence (which curbs the extent to which the employed can hunt), than by the actual availability of caribou.

Unearned Income

The total unearned income of this settlement for 1967 was \$16,179 or \$475 per household. This figure is relatively and absolutely lower than that of the other two settlements. The income from social legislation was double that received in social assistance. Payments in family allowances were almost equal to that of pensions and social assistance payments were less than either of them.

There were five people (four households) in receipt of pensions and social security payments. In two households this income was the major source of money available to the household.

Nine people distributed among eight households (of which one was receiving social security) were provided with some form of social assistance. For the year, these amounts ranged from \$10 to \$942.

The income from family allowances plays an important part in the economy of the settlement. It represents almost 9 per cent of the gross community income as shown in Table 41. As 1967 was a year in which the income from wages was unusually high the importance of income from social legislation has been over-shadowed. Under more normal conditions the reliance on these sources of income is high as they represent the only reliable and continuing input of money that is available to these people.

The erratic mail service, and the absence of local facilities to cash cheques, further complicates a situation in which these people not only have nowhere to spend whatever little money they have, but access to even these small amounts involves tiresome process. Whatever purchases these people might want, or need to make, have probably been so frustrated that it has in all likelihood been simpler to accumulate the cheques and spend them collectively on one item. Of all three settlements Pelly Bay has the lowest income from trapping and wages, (the lowest annual average cash income per household), and the largest number of ski-doos. With encouragement and advice, perhaps this considerable experience with goal orientation and saving can be utilized by these people to develop capital for further collective commercial enterprises, that would not only escalate the present level of earnings but generate further local capital through interest rates.

Income from Handicrafts

One function of the Koomiut Co-operative at Pelly Bay is that of acting as the purchasing agent for locally made Eskimo handicrafts and carvings which are retailed to southern markets through Canadian Arctic Producers in Ottawa.

Even though 1967 was the first year of operation for this enterprise, \$1,940 was paid out to local producers. This sum is only a little less than the income from fur sales of the community. The ivory and stone required by the carvers has to be imported from Igloolik. Neither ivory or soapstone are available locally, and due to problems with transportation there have been long periods during which materials have not been available. When they are, the productivity of local carvers is prodigious.

Purchase and retail prices of carvings and artifacts are determined by an elected committee and items for sale are taken to the co-op office where they are recorded and catalogued. At weekly meetings of the committee the pieces are evaluated and priced.

At the time of the survey, the Koomiut Co-operative was in the process of encouraging the development of an embryonic garment industry. Eskimo parkas, mitts and footwear for resale were being fabricated by a number of women and retailed through C. A. P.

The industry and enthusiasm in this settlement for this means of increasing incomes was quite outstanding. The fact that the income from what has been categorized in Table 41 as handicrafts, is almost equal (in the first year of productivity) to the more traditional form of income, fur sales, seems to suggest there is a fairly general preference for these more sedentary forms of employment. During 1967, fourteen women and eighteen men earned from \$2.25 to \$159 from the sale of handicrafts and carvings. Although the sums involved are not large, there appears to be a potential for development and for a small scale garment industry if work space, modern equipment, and advice on techniques are available.

Gross Community Income

In comparison to Spence Bay and Gjoa Haven, Pelly Bay has both the lowest level of cash income and the smallest proportion of unearned income. In fact, the amount of social assistance in this community is almost half that of the other settlements.

TABLE 42

DISTRIBUTION OF GROSS FAMILY INCOME PELLY BAY, 1967

Family Number	Persons			Fur Sales	Legislation	Assistance	Total
	Adult	Child	Wages	Handicrafts			
1.	2	2	114	145	—	72	— 331
2.	2	3	604	33	261	216	— 1,114
3.	2	—	36	9	—	—	— 45
4.	1	1	—	35	—	96	844 975
5.	1	—	—	—	—	—	485 485
6.	2	2	1,092	—	15	144	— 1,251
7.	4	6	3,833	117	54	1,722	— 5,726
8.	2	5	525	210	78	384	— 1,197
9.	3	—	1,948	—	—	1,284	— 3,232
10.	2	3	344	182	275	240	— 1,041
11.	2	1	—	12	165	72	— 249
12.	2	1	—	—	—	1,356	870 2,226
13.	2	2	526	63	—	144	— 733
14.	2	1	6,971	—	—	72	— 7,043
15.	2	2	1,652	—	—	144	— 1,796
16.	2	1	436	95	186	72	— 789
17.	3	1	1,680	85	12	96	732 2,605
18.	2	5	131	74	388	258	— 851
19.	2	2	385	32	265	144	— 826
20.	2	4	394	41	156	376	— 967
21.	2	1	—	—	102	96	937 1,135
22.	3	2	—	94	6	130	— 230
23.	4	2	955	127	6	188	— 1,276
24.	3	4	795	39	114	240	10 1,198
25.	3	2	4,498	15	36	188	— 4,737
26.	2	1	3,600	—	—	36	169 3,805
27.	2	2	200	38	—	144	— 382
28.	2	2	720	85	20	144	942 1,911
29.	4	4	2,668	47	6	376	— 3,097
30.	2	2	366	75	180	72	— 693
31.	4	1	3,561	52	—	1,896	— 5,509
32.	4	—	4,885	96	48	96	— 5,125
33.	2	2	465	54	—	188	— 707
34.	3	6	1,213	85	81	504	— 1,883
TOTALS			44,597	1,940	2,454	11,190	4,989
							65,170

TABLE 43
COMPOSITION AND GROSS CASH INCOME OF HOUSEHOLDS
PELLY BAY, 1967

Composition of Households		Gross Income per Household						
Adults	Children	Under \$500	\$500-999	\$1000-1999	\$2000-2999	\$3000-3999	\$4000-4999	\$5000
1	—	1						
1	1		1					
2	—	1						
2	1	1	1	1	1	1		1
2	2	2	4	3				
2	3			2				
2	4		1					
2	5		1	1				
3	—					1		
3	1				1			
3	2	1					1	
3	4			1				
3	6			1				
4	—							1
4	1							1
4	2			1				
4	4					1		
4	6							1
TOTALS		6	8	10	2	3	1	4

Wage labour has contributed the highest proportion of the monetary income of the settlement, almost 57 per cent of which was earned through casual labour. As a rule the demands for casual labour are very low in this community, but with the construction of the low-rental Eskimo housing and airstrip in 1967 the earning from these sources amounted to almost double the incomes from permanent employment. The resulting household average of \$1,311 given in Table 41 is in no way comparable to the annual averages of previous years. In fact, with not only the limited amount of permanent wage labour available in Pelly Bay, but the almost negligible demands for casual labour, there is a very marked discrepancy between the incomes of the few people who are permanently employed and the rest of the population.

In terms relative to the community, those few people with incomes of \$3,000 and over are wealthy in comparison to the by far larger number of people with incomes below this. A distribution of gross family income is given in Table 49, and the composition and gross cash income of households is summarized in Table 50. It can be seen from these tables that even with the rise in levels of employment, both through the co-operative and the increase in casual employment, almost three-quarters of the households in the community earned under \$3,000.

The sale of handicrafts through the Koomiut Co-operative added three per cent (\$2,017) to the gross community income, which is almost on a par with the income derived from fur sales. With the low level of winter trapping and hunting, and the enthusiasm for a more sedentary means of increasing income through the production of arts and crafts in the home, these people might respond and adapt very quickly to industrial processes if small commercial enterprises could be initiated in the community.

A summary of the economy of this settlement for 1967 would indicate, that while the average household income for the year was the lowest of all three settlements, it was very much higher than in previous years.

A local construction program that included building a land based airstrip to accommodate D. C. 4 aircraft, and a housing program to provide dwellings for all the Eskimo families in the community, created an unusual demand for casual employment. The development of a local co-operative (that obtained contracts to supply the community utility services), made available seven new permanent positions, which together with their payments for casual labour added 34 per cent to the wage earnings of the community. As a local purchasing agent for handicrafts the Koomiut Co-operative also provided another avenue through which earnings could be increased. The community income from handicrafts was only 1 per cent lower than that derived from fur sales.

The amount of social assistance in the community is low. Due to the absence, until 1967, of a local retail store, these people were more oriented toward meeting their dietary needs through hunting, and it has been suggested earlier that their relatively low demands for manufactured items is to some extent influenced both by their lack of exposure to these products and to the expense and difficulty of obtaining even the items they are familiar with.

On completion of the local construction programs, the money economy of this settlement will have increased only to the extent that the jobs created by the establishment of a co-operative continue to be available. As the entire adult population of the settlement derive some benefit through the Koomiut Co-operative, the viability of this enterprise is of primary importance to the community. Every effort should be made by developmental agencies to assist this organization to establish on a firm economic basis through expansion and diversification of its economic activities.

Gjoa Haven

Levels of Capital Investment

The discussion at the beginning of this chapter is applicable to Gjoa Haven and similar procedures have been used to determine the figures arrived at in Chapter 4. These are summarized in Table 44.

TABLE 44

Résumé of Capital Investment by Source
Gjoa Haven, 1967

	Dollars
Government	399,000
Private	
H.B.C.	136,000
Kekertak Co-operative	81,750
Anglican church	61,400
Catholic church	122,000
Eskimo	
Harvesting equipment and housing	70,091

Labour Force and Wage Employment

At the end of 1967 the labour force in this community was composed of 47 men and 49 women who represented 48 per cent of the total population. Of the Eskimos nine (or 19 per cent) of the men and three (or 6 per cent) of the women have permanent jobs. The labour force is well in excess of the employment opportunities available in the community, and the imbalance will increase if any of the Perry River families locate in community, and as groups from Back River relocate at Gjoa Haven.

Until very recently wage employment for Eskimos in Gjoa Haven has been confined to casual labour, and four or five permanent positions. For twenty-five years an Eskimo was the manager of the H. B. C. store, after his retirement the position was filled by a non-Eskimo employee of the company. The post of school janitor, store clerk, and the two missionaries have been the other positions which have lasted for a number of years.

The people of this settlement have had little opportunity to acquire the concepts and develop the expertise of dealing comfortably with the demands of wage employment. Five of the seven men who went out to work for the Great Slave Lake Railway had returned to the settlement within 10 weeks. One of the others took his family with him and having relatives also employed by the G. S. L. R. had not returned to Gjoa Haven at the time of the survey a year later. The other man spent seven months with the G. S. L. R. before returning home.

TABLE 45
OCCUPATIONS AND PERMANENT EMPLOYMENT BY ETHNIC GROUP AND SEX
GJOA HAVEN, 1967

Occupation	WHITE		Occupation	ESKIMO	
	Number Male	Employed Female		Number Male	Employed Female
Teacher	1	2	Teaching assistant		1
Store manager, H.B.C.	1		School cook		1
Total "	2	2	School janitor	1	
			Lay Dispenser	1	
			Store clerk, H.B.C.	1	1
			*Co-op Manager	1	
			Co-op driver	2	
			Janitor in charge of laundry	1	
			Missionary	2	
			Total	9	3

* The Co-op manager is also the resident catholic missionary.

As has already been stated, this type of situation has been discussed thoroughly in other reports. However, it is suggested that until such time as local industries have developed sufficiently to absorb a considerable portion of the labour force, these Eskimos are assisted with travelling costs and supportive services in the wage labour situation in southern communities. However short the period of casual employment might initially be, the process would provide learning experience for employer, employee, and communities. The Eskimo would have the opportunity to develop skills and levels of sophistication that

TABLE 46
SEASONAL AND CASUAL EMPLOYMENT OF ESKIMO
GJOA HAVEN, 1967

Employer	Male	Female
Department of Indian Affairs and Northern Development	29	1
Northern Transportation Co. Ltd.	11	
Northward Aviation Ltd.	1	
Great Slave Lake Railway	7	
Hudson's Bay Co.	12	—
Kekertak Co-operative	9	—
Total	69	1

could be applied to local industries as they develop, or gradually to gain sufficient confidence to relocate in another community if he so wishes. At the very least, it would help to raise income levels quite appreciably, until local economics are capable of providing the required level of employment.

Income from wages amounts to almost 58 per cent of the total cash income of the settlement, nearly half of which was earned by the men employed by the G. S. L. R. (Tables 49 and 50).

Permanent Employment

Table 45 gives the permanent employment status of the community. All but five permanent positions held by Eskimos have been created within the last two years. The job of the male store clerk has been more in the nature of long-term, part-time employment than a full-time job. Approximately one-third of the total income from wages in 1967 was derived from permanent employment. The 12 Catholic missionary has acted as manager of the co-op, and will continue to do so until a competent replacement has been elected by the board.

In this community, the co-op has created four more jobs that contributed almost 8 per cent to the level of earnings from permanent employment, and as the enterprise expands, others should evolve. The building of a nursing station will make two more jobs available to the Eskimos, but that would appear to be the limit to which the labour force will be utilized unless industrial complexes are developed.

Casual Labour

As with Spence Bay, the occurrence of casual labour tends to be seasonal. The D. I. A. N. D. employs the largest number of men on a casual labour basis (Table 46) for construction jobs and various community development projects. As these vary annually, large fluctuations can occur in the amount of employment that can become available through this source.

Casual employment figures for 1967 given in Table 46 indicate that 69 vacancies occurred during the year and that a number of men were on more than one project. Seven of these jobs were available at a centre external to the community.

Approximately two-thirds of the men in the settlement were employed for a short period by the H. B. C. and N. T. C. L. to assist with the unloading of the supply ship and removal of cargo from the beach. Northward Aviation also periodically hires men to assist with unloading aircrafts, and retain the Catholic missionary as their local agent. Income from casual labour earned through these three sources in 1967 amounted to approximately 3 per cent of the wage earnings of the settlement.

TABLE 47
INDIVIDUALS TRADING FURS DURING A MONTH
GJOA HAVEN, 1967

Number of Fur Sales Per Individual	Number of Individuals Selling Furs											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	13	13	8	11	5	12	3	8	2	—	6	7
2	9	4	5	5	12	3	1	1	1	—	3	2
3	5	3	4	4	4	—	1	—	—	—	1	2
4	2	3	4	5	1	—	—	—	—	—	—	1
5	1	—	—	3	1	—	—	—	—	—	1	—
6	1	—	2	2	1	—	—	—	—	—	—	1
TOTALS	31	23	23	30	24	15	5	9	3	—	11	13

Number of licences issued 1966-67 — 47

Number of licences issued 1967-68 — 49

Since the incorporation of the co-operative in December 1966, demands for both permanent and casual labour have increased. While the co-operative provided a larger rate of earnings in terms of permanent income, nine men were also able to obtain some casual employment with the organization. Whether this co-operative will be able to expand as rapidly as the one at Pelly Bay is doubtful, as a retail outlet would have to survive in competition with an already well-established organization in a community in which the low level of per capita income is already a brake on consumer spending.

For 1967, 40 per cent of the income from wages was earned by men employed by the G. S. L. R. Earnings from all sources of casual employment accounted for around 62 per cent of the total income from wage employment. Table 48 and Figure 32 give a more detailed breakdown of the sources of income and the proportions these represent in the gross community income.

The utilization of opportunities for casual employment in other centres has already been discussed as a temporary means of rapidly raising the cash economics of these settlements. The correlate of this is that if cash savings can also be affected, Eskimos in these settlements can quite rapidly acquire the necessary capital to develop their own economic resources. The process requires implementation and further investigation as an avenue through which Eskimo entrepreneurship can find expression in an industrial-technical era.

Hunting and Trapping

For the 1967-68 season, out of an adult male population of 51, general hunting licences were issued to 49 adult males. The number of men trading fur during 1967 is given in Table 47, and provides some indication of the trapping activities of the settlement. Fur sales for the year amounted to \$10,595, which represented 10 per cent of the gross cash income of the community.

As stated in a previous section, it was not possible to determine the size of yearly faunal hunting harvests from records in the community, with the result that estimates are likely to be of limited value. It is pertinent to note that even though the figures given in Table 11 were often estimates of their harvest, the averages indicate that faunal resources continue to contribute substantially to the subsistence economy. Even if averages for the whole group were slightly lower than those given in this Table, the game utilized by households would not be an inconsiderable amount if translated into cash values.

In comparison to Spence Bay, there is a lower incidence of wage labour at Gjoa Haven, which might be reflected in the larger number of caribou reported by the hunters at Gjoa. Seals are less abundant in the immediate vicinity of Gjoa Haven, but caribou are particularly accessible to these people, and perhaps with less money to purchase food, and less wage labour to restrict mobility, the Eskimos at Gjoa Haven more intensively harvest the natural resources.

As a proportion of the gross community income, the returns from fur sales of both settlements are almost equal, but the number of licences issued at Gjoa Haven is a little over half (59 per cent) of those issued at Spence for 1967-68, whereas the gross community income from fur at Gjoa is 64.2 per cent that of the sum of Spence. It would seem that for a number of reasons, even though the Eskimos at neither settlements are trapping intensively, the people at Gjoa Haven are relatively more oriented toward harvesting fauna, both as a means of increasing their monetary resources and supplying their food requirements.

Unearned Income

Social assistance and social legislation accounted for approximately 28 per cent of the gross community income. The gross unearned income of the community amounted to \$29,542 and ranged from \$60 to \$3,022, giving an average of \$820 per household. As the total amount from these two sources are almost equal, it would appear that the supportive factor of social assistance is relatively low in the total economy.

The five people who received social security payments and disability pensions were distributed among four households. Those of these incomes represented the major cash income of the household. Thirty-four households received income from social legislation, which ranged from \$72 to \$2,784.

Out of 36 households in the community 33 received social assistance in some form. They were assisted with food, through fish purchased from the co-operative, with equipment or clothing purchased from the H. B. C. store, or with housing rental payments. The latter have not been included in the figures for unearned income in this report.

Income from Handicrafts

One of the main functions of the co-op at Gjoa Haven is that of providing an outlet for the locally produced arts and crafts.

The agency is both the local purchasing agent and distributor through which the products reach retail outlets in the south. The co-operative maintains three principal avenues of distribution which are the Rock Shop in Yellowknife, TEAM Products in Edmonton, and C. A. P. in Ottawa. A small number of items are marketed through the Craft Centre in Inuvik, and a retail outlet in southern Ontario.

In this settlement, access to a local handicraft purchasing agent has stimulated the productivity of the local people to the extent that an additional \$4,026 was added to the gross income of the community. The 31 men and 32 women, whose earnings from this source ranged from \$1.50 to \$390 for the year, represent 65 per cent of the total labour force of the community.

Due perhaps to the unavailability of ivory or soapstone, the handicraft producers at Gjoa Haven have tended to specialize in bone carving and the fabrication of either miniatures of, or full size traditional artifacts from bone and sinew. A few of the smaller items of clothing, such as sealskin, mitts, and boots, and duffle-liners were made for resale, but the production of garments and footwear did not appear to have been in any volume or, at the time of the survey, to have gained in impetus.

FIGURE 32

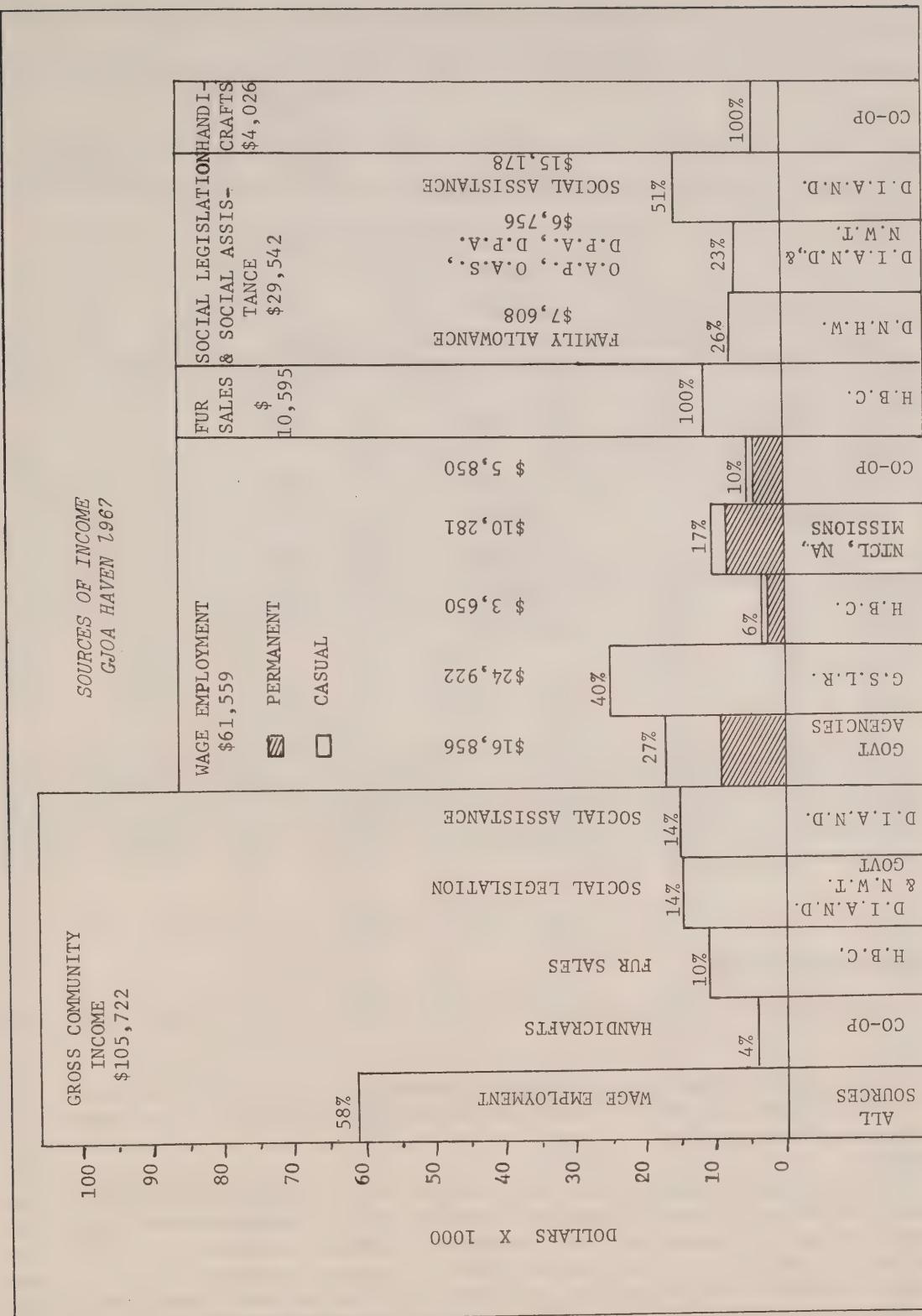


TABLE 48
DISTRIBUTION OF GROSS INCOME
GJOA HAVEN, January – December 1967

Source	Value (dollars)	Household Average Income (dollars)	Percentage of Total Income
Earned			
Wages	61,559	1,710	58
Fur sales	10,595	294	10
Handicrafts	4,026	112	4
Sub-Total	76,180	2,166	72
Unearned			
Family Allowance	7,608	212	7
O.A.P., O.A.S., and Disability Allowance	6,756	187	7
Social Assistance	15,178	421	14
Sub-Total	29,542	820	28
Total Income	105,722	2,936	100

The Eskimos at Gjoa Haven appear to have had little guidance with the development of this arts and crafts industry until the appointment, by the D. I. A. N. D., of an arts and crafts specialist to the region. There is no doubt whatever that these industries could be expanded in the settlement to the Eskimos' advantage and with assistance in equipment, production, and marketing techniques, one or two viable small industries should develop quite quickly.

Gross Community Income

Both the gross community income, and the relationship of the various sources of income to the economy are given in Table 48.

Wage employment and monies from sources of unearned income amount to 86 per cent of the cash income of the community. The sale of handicrafts has added 4 per cent (\$4,026) to the economy that was not previously available.

The seemingly low proportion that the income from fur sales represents in the gross community income, may be either a result of a general lack of enthusiasm for the hardships of winter trapping, so that people only trap to the extent that money is required to supplement the cash income from other sources, or it may be a reflection of the higher earnings of the men who were employed by the G. S. L. R., whose earnings amounted to 40 per cent of the total wage income of the settlement. Without this income the monetary input from other sources would have assumed a greater significance in the gross community income, but even in this relationship the incomes from fur sales and handicrafts would have been of less than those derived from the sources of unearned income.

The distribution of gross family income given in Table 49 have been regrouped in Table 50 to facilitate an overview of the levels of household income. The latter Table indicates that half of the households in Gjoa Haven had cash incomes of \$3,000 and over, of which almost one-third were in excess of \$5,000. However, when it is realized that there are only three permanent positions in this community in which the incumbents earnings are in the \$5,000 category, the effect of the high wage earnings of the group employed by the G. S. L. R. become more apparent.

TABLE 49
DISTRIBUTION OF GROSS FAMILY INCOME
GJOA HAVEN, 1967

Family Number	Persons		Wages (dollars)	Handicrafts (dollars)	Fur Sales (dollars)	Social Legislation (dollars)	Social Assistance (dollars)	Total (dollars)
	Adult	Child						
1.	3	3	5,912	59	387	240	370	6,968
2.	3	2	620	104	143	188	932	1,987
3.	2	3	50	4	228	240	—	522
4.	2	5	960	116	935	312	344	2,667
5.	2	1	7,075	58	—	—	60	7,193
6.	4	2	2,741	47	108	144	45	3,085
7.	2	3	115	75	159	216	107	672
8.	2	3	50	158	431	204	494	1,337
9.	3	2	543	502	—	188	500	1,733
10.	2	—	49	—	102	972	137	1,260
11.	3	3	464	188	7	240	653	1,552
12.	4	5	601	300	924	384	654	2,863
13.	4	1	1,072	173	200	—	613	2,058
14.	3	4	1,679	163	62	360	718	2,982
15.	2	6	7,593	—	16	432	399	8,440
16.	2	4	99	46	248	288	597	1,278
17.	4	3	6,446	—	662	376	—	7,484
18.	2	2	50	240	457	188	725	1,660
19.	2	3	76	31	638	216	639	1,600
20.	3	6	2,432	311	—	420	—	3,163
21.	5	3	1,427	16	909	2,784	238	5,364
22.	2	4	—	11	95	312	467	885
23.	2	3	50	85	351	240	227	953
24.	2	2	55	—	343	132	449	979
25.	3	2	—	127	619	144	598	1,488
26.	3	1	—	115	—	72	716	903
27.	7	4	4,191	172	51	2,340	221	6,975
28.	2	2	5,122	30	233	216	28	5,629
29.	2	2	118	41	96	144	547	946
30.	2	2	101	50	145	144	634	1,074
31.	3	3	351	211	597	240	685	2,084
32.	2	1	148	41	374	72	805	1,440
33.	2	2	126	52	704	216	661	1,759
34.	2	1	2,900	2	—	72	80	3,054
35.	3	2	1,042	458	—	1,472	284	3,256
36.	5	2	7,311	40	371	96	611	8,429
TOTALS			61,559	4,026	10,595	14,304	15,238	105,722

TABLE 50
COMPOSITION AND GROSS CASH INCOME OF HOUSEHOLDS
GJOA HAVEN, 1967

Composition of Households		Under \$500	\$500-999	\$1000-1999	\$2000-2999	\$3000-3999	\$4000-4999	\$5000
Adults	Children							
2	—			1				
2	1			1		1		1
2	2		2	3				1
2	3		3	2				
2	4		1	1				
2	5				1			
2	6							1
3	1		1					
3	2			3		1		
3	3			1	1			1
3	4				1			
3	6					1		
4	1				1			
4	2					1		
4	3							1
4	5				1			
5	2							1
5	3							1
7	4							1
TOTALS	36		7	12	5	4		8

Without this income the cash resources of this settlement would show almost the same distribution as the other settlements in regard to the disparity between the incomes of the permanently employed and those who are not.

In summary, the earnings from casual employment of seven men through a source external to the community had, in 1967, boosted the cash income of the settlement by almost one-quarter of the gross community income for the year. This has had an equalization affect on household incomes, but whether or not the added income had an effect on the trapping-hunting activities of the group is difficult to determine.

Another, hitherto unavailable source of income was derived from the sale of handicrafts to the co-op. Almost 4 per cent of the gross community income was earned from the sale of handicrafts which when combined with the increased wage earnings mentioned above, added \$28,948 to the total monetary resources of the settlement. The gross community income was further increased by the payment of \$5,850 in wages by the newly incorporated co-operative. Income from all three of these sources boosted the gross community income for the year by almost 33 per cent.

The, as yet, undeveloped handicraft industry would seem to provide a base out of which two small local industries might be developed. The possibilities of establishing a small garment industry and a handicraft workshop need further investigation.

CHAPTER 6

GENERAL REMARKS, SUMMARY, CONCLUSIONS AND SUGGESTIONS.

An analysis of factors underlying or influencing courses of action or policies affecting the Arctic Archipelago are beyond the scope of this report, but for present purposes it is possible to suggest that a re-evaluation of approaches to the process of economic development are required, on one hand, in terms of community, area and regional levels and, on the other, in terms of the individuals concerned.

Having deemed it desirable to mould the Eskimo in our social image, an industrialized society may now be experiencing hesitancy, and uncertainty, about the outcome of the whole process of Eskimo acculturation. Unless the tenet of the desirability of formal education is abandoned, and the Eskimo is encouraged to return to a subsistence economy more heavily weighted in favour of a higher degree of seasonal mobility and an increased dependency on the harvesting of faunal resources, the process of formal education will inevitably interfere with the perceptions, ability, and desire of the Eskimo to return to, and be content with, a lower standard of living than he is able to attain if given the opportunity.

In the settlements and camps included in the survey area, exposure to a curriculum-type of education has been a relatively new experience, and as yet the standards of general education are low. The broad expansion of the population in the population pyramids of the three communities indicate that in a little over 10 years, the number of men in the labour forces will have increased by almost one third. Having grown up in a residential school or in these more sedentary settlement groups, these young people may be less inclined to resort to the natural resource base to supplement incomes. Having acquired only a limited amount of knowledge and experience of survival in an Arctic environment, this younger generation of Eskimos may be less able to survive as harvester of wildlife. It becomes incumbent upon present planners to identify economically retarded communities and use all resources available to escalate levels of employment so that these young people are not presented with a situation in which, in their terms, the only reasonable course is that of having to resort to social assistance.

In all the settlements there is an immediate need for more wage employment, both to raise income levels and to provide a broader range of interactions in which the labour force can develop skills and familiarity in meeting the expectations of these situations, whether they occur in the home community or in centres external to it.

It might be suggested that as the horizons of the Eskimo are broadened through education and acculturation, an Arctic environment may no longer present the challenge it did to their forebearers. Their vistas, in which to excel, might conceivably extend southwards. A change in image and aspiration from being the best hunter and provider to that of any one of the galaxy of employment roles that an industrial society offers, might be the motivating force of the younger generation of Eskimos. This generation could be swept under the then stifling mantle of a cultural past, if not afforded the exposure to the social processes of a culture in which they might wish to participate.

Of the natural resources of the Archipelago it is doubtful whether the renewable resources can support a substantial increase in population, and the present relatively unknown non-renewable resources might be more amenable to exploitation at a later date when private investment, capital, and technological advances make this economically feasible within the then existing prices and markets.

This survey has not found a massive amount of evidence to suggest that drastic economic changes are about to occur in the region. The subsistence economies of the settlements are likely to continue to experience minor fluctuations and to continue at their present status, with an increasing ratio of assistance from government sources due to the difficulties created by rising population levels.

Conclusions

One obvious conclusion is that regional and community development projects should be synthesized for magnum development stratagy. There is a need for the selection and development of growth centres whose economies appear to be the most viable, with good growth potentials. With a proliferation of industrial enterprises in these centres, subsidiary enterprises can be developed in the smaller communities to feed into the industrial processes at an escalating level of economic growth.

With the populations of the settlements increasing as rapidly as they are, and the rising levels of education that should occur every effort should be made to assist these groups to extend their range of marketable skills and to develop self-assurance in coping with the social processes of another culture. On this basis, with the availability of local employment, a population is able to make individual choices between attaining new economic and social goals, or remaining in the community and adjusting to an existing regime. A developing wage economy will draw its best labour potential from individuals who are confident in their skills, and their ability to earn a living through these. Not only should efforts be made to develop local industries, but new avenues through which wage earnings can be increased need not be restricted to the local region. Seasonal employment, in the large metropolitan centres of southern Canada, is a real possibility for even relatively unskilled labour.

The relocation of individuals or family groups is another avenue for economic mobility that has been relatively untried by these Eskimos. With financial assistance and social support, migrating families or individuals can be encouraged to accept occupational and/or geographical mobility in such a way as to make these processes at once practicable and gratifying within the socio-economic fabric of other communities. Once a small nucleus of migrants have established themselves in southern communities, they might be able to provide all the social support that is necessary to assist other Eskimos through the process of acculturation. Children educated at schools in southern Canada can become familiar with the mores and values of another culture, and have the opportunity to acquire a degree of social sophistication in another cultural context that is not available to the children denied this exposure. In time they would be more capable of making an educated choice in regard to occupational aspirations and a preferred style of life.

Suggestions for Development

This report will serve to focus attention on existing problems through the suggestion of solutions, which are designed to improve the conditions of the Eskimos at a number of levels. These are categorized as:

1. Site Conditions

Suggestions made earlier in the report have been:

- (a) Relocation of the settlement at Spence Bay on a site more conducive to community expansion, and one in which it is possible to develop a road system, so that all buildings are accessible to vehicular traffic.
- (b) Provision made in the settlement site plans of all three communities for land that can be developed as an industrial section.
- (c) At Pelly Bay, reclamation of the site is continued with the addition of gravel fill, both under the buildings and on the surrounding yards, to provide firm support and more sanitary surroundings.

2. Transportation and Communication

- (a) A monthly scheduled air service is initiated to Pelly Bay so that mail and freight can reach the settlement with some regularity.
- (b) A public radio-telephone system is installed in the community under the jurisdiction of the co-operative.
- (c) At Gjoa Haven the road linking the airstrip to the settlement is gravelled.

- (d) In the event of it not being possible to relocate the settlement at Spence Bay, considerable attention is given to developing a road system in the community, and that the unloading areas along the beach are cleared and gravelled.
- (e) The existing dock at Spence Bay is enlarged and made less hazardous.

3. Facilities and Services

- (a) All Eskimo houses in the area should be equipped with at least 40 gallon indoor water-storage containers elevated on stands. These containers should be fitted with removable lids for the container to be filled and taps at the bottom from which water can be drawn.
- (b) A suggestion that a cost analysis of projected requirements is made of the relative merits of supplying heat to Eskimo dwellings through the use of hydro.
- (c) All dwellings at Gjoa Haven are equipped with covered outdoor garbage barrels that are elevated on stands.
- (d) At Spence Bay the winter garbage disposal method of dumping refuse on the ice is replaced by an inland site, where garbage can be burned, or covered by earth as and when required.
- (e) Earlier in the report it was suggested that a multi-purpose community centre could be developed at Spence Bay to provide recreational and service facilities that are at present lacking in the settlement. Existing buildings in the other two settlements could be expanded to meet community, recreational, and service needs.
- (f) Increased freezer space or permafrost ice-cellars in the three communities are made available to individuals and local agencies.

4. Socio-Economic Development

- (a) The Eskimo people are given further opportunities to assist in the administration of their community funds and be engaged in supervisory positions whenever possible.
- (b) Further assistance be provided with upgrading in formal and technical education, and that these services are designed to be flexible enough to provide social and financial support to groups or individuals wishing to relocate to utilize these acquired skills.
- (c) Job opportunities for permanent or casual employment in southern Canada are made available to the people of this region, and that they are assisted in every way possible to take full advantage of these situations.
- (d) Biological studies are required to determine the population size of caribou, seals, char, and trout, so that plans can be developed to increase domestic harvests and small commercial operations based on renewable resource utilization.

Four pilot projects have been suggested regarding renewable resource utilization which need further investigation.

- (i) A tannery and fur garment factory at Cambridge Bay into which can be fed the fur take of the settlements serviced by aircraft based at Cambridge Bay.
- (ii) A seal-meat cannery based at Spence Bay that can process the carcasses of the local harvest and those that are shipped in from Gjoa Haven and Pelly Bay. During the summer carcasses can be stored in freezers at these two settlements and shipped frozen to Spence Bay.
- (iii) Commercial fisheries in the Spence Bay, Pelly Bay, and the Back River areas that can be fed into the co-op commercial fishing operation at Cambridge Bay and disposed of through their marketing channels.
- (iv) The development of a tourist industry at all three settlements catering to trophy hunters and fishermen.

For the survey region as a whole, more consideration should be given to increasing the yields of the faunal resources through:

- (i) The more generalized use of seal-nets and improved harvesting techniques.
- (ii) Community hunts sponsored by the co-operatives, for which hunters can be paid for their services. The carcasses can be stored in local freezers and sold by the co-operative to the community at a marginal profit. Fish not used in commercial fishing operations could be stored and sold for local consumption.
- (iii) A "rent a trap" system developed by co-operatives through which fox traps are rented to trappers on a loan repayment basis or a straight rental basis.
- (e) Encouragement to the handicraft industries at the settlements could be provided through (1) greater availability of materials for carvers, (2) development of a craft workshop where space and modern equipment could be utilized by the carvers, (3) technical advice available through a local arts and crafts officer, and (4) opportunities to develop skills in other media.
- (f) Pilot projects could be instituted to assess local skills and enthusiasm for a garment manufacturing industry. As the goods produced, such as cloth parkas, liners for mitts and boots, ear-muffs, windbreakers, and such like are items that would be particularly suited to an Arctic environment, they might have a ready market in the government residential schools and welfare department. Specialized items could be fabricated to cater to the tourist industry of the Northwest Territories, for the northern detachments of the R. C. M. P. and for the sportswear industry of southern Canada.
- (g) The development of a co-operative at Spence Bay might occur rapidly once Eskimo leaders in the settlement were able to observe the benefits accruing to the other communities through the rising levels of personal income that have been obtained through a proliferation of co-operative owned enterprises.
- (h) Until such time as the Eskimos have acquired the necessary capital and experience in industrial management – production-marketing methods, there will be a need in the region for assistance with plant, equipment, industrial techniques, and improved management and marketing methods for all industries, whether these have developed on a cottage industry basis or whether they grow out of pilot projects.
- (i) Within the context of regional or area development plans, the people of these settlements must be helped to attain a higher degree participation in economic development programs. Whatever processes contribute to enhancing the self-determination and self-direction of these people must be made available to them. The choice of what they become must be their own, but one that is made on the availability and knowledge of alternatives; and they must be helped to prepare for the day when they can assume full responsibility for their own affairs.

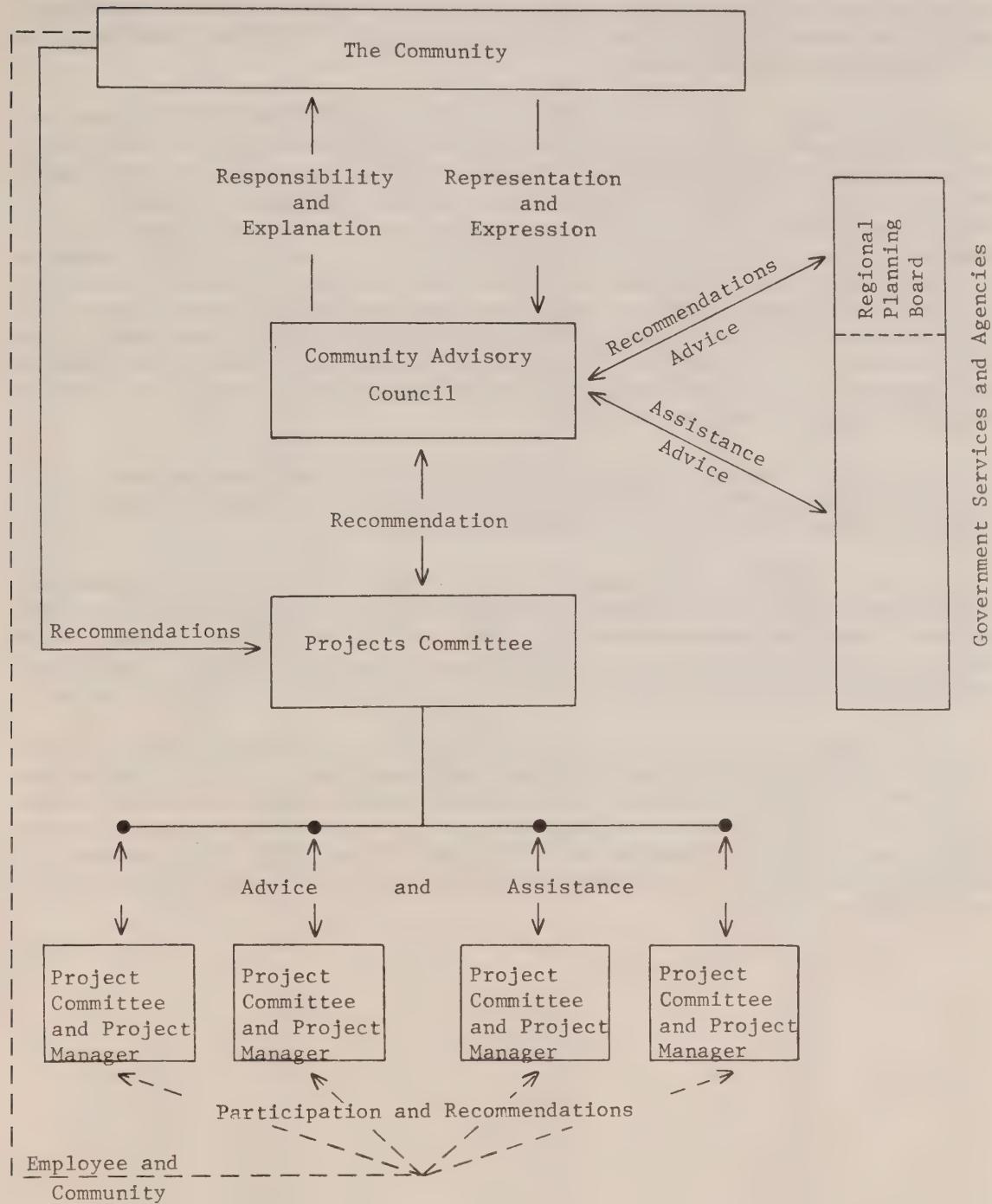
Every effort must be made to provide these Eskimos with the necessary financial expertise and rights to pursue the development of the natural resources and their own talents. Two preparatory measures are suggested, one is in the formation of regional planning boards, at the highest level of government, dealing with the problems of a number of Arctic localities, including those of the settlements in the survey area. Within the context of regional planning and development the economic problems faced by individual communities can, to some extent, be solved.

The program calls for an organizational structure of varying levels through which there is a continuous dialogue between the individual and planning groups. The accompanying diagram is a schematic presentation of representation within the framework of regional planning and community development.

The areas of responsibility of a regional planning board would include the preparation of an inventory of resources and the preparation of a master plan for regional development. They would be in a better position to see the development potential of various areas and the region as a whole, and would have the

Figure 33

PROPOSED FRAMEWORK FOR REGIONAL PLANNING AND DEVELOPMENT



Government Services and Agencies

function of initiating numerous development proposals. Their primary functions would be to investigate, oversee, integrate, and recommend.

The duties of a locally elected community advisory council would be to define development goals and recommend development priorities. This council would be responsible for scrutinizing recommendations from the regional planning board, as well as those originating locally, and while maintaining the discourse between the community and planning groups they would be empowered to choose development projects that are in accord with their objectives and budget. That is, they would co-ordinate all developmental projects by recommending budgetary priorities. They would be required to provide some preliminary terms of reference to guide in detailed planning.

A sub-committee of this body, called the projects committee, would be composed of a representational membership of the community advisory council, the chairmen of project committees and elected representatives from the community. This body would function as a projects initiation group, whose role would be to oversee the activities of project committees, make preliminary assessments of the feasibility and desirability of proposals for development, and report their findings and suggestions to the community advisory councils. Through this group there would be a continuing dialogue between the citizens, the local advisors, and planning consultants. If there were a continuing dialogue, the final plan would be acceptable to the project committee and community, since it would incorporate their views. The project committees and project managers would be drawn from a body of citizens most interested in the project and with most to contribute to it. They would function as the board of directors and management of the enterprise, and at this level would represent the direct involvement of employees and the individuals interested in community growth and development.

The proposed framework, so briefly described, might appear somewhat cumbersome. However, in use it should be efficient, provide maximal local autonomy and directly involve the individual in the process of self-direction within the context of his own environment.

The role of government in this paradigm would be threefold. Firstly, as a regional planning and developmental body they would participate in the evaluation of resources and the initiation of economic enterprise. The next function would be that of an advisory body that would provide consultative services through which feasibility studies are undertaken. Lastly, as a resource body, assistance would be made available through management, low-interest loan programs, tax exemptions and other monetary policies.

These people must be prepared to fend for themselves in an era of rapid change and other economic processes. The second proposal for preparation is that these Eskimos must be assisted to educational and acculturative levels where they are armed with the skills and social confidence with which to compete successfully in the national labour market if they so choose. That, "these values on the whole are developed through education and through interaction with other cultures" (Trudeau 1968, p. 34) does not mean that the Eskimo of the future is any less an Eskimo but merely that he is as different from his ancestors as any other cultural group will be.

APPENDIX 1

SCHOOL ATTENDANCE, 1967-68

APPENDIX 2 SPENCE BAY ENVIRONMENT - BY AGE AND FAMILY HEAD, 1963

Age of Head	No. of Dep.	Age of Co-User	No. of Dep.	Relationship of Co-User to head	Komati	Ski-doo	Canoe	Rifles	Binoculars	Fish Nets	Outboard Motors	Dogs	Seal Nets	Traps
40	2	22	22	Father	1			22 mag, 22 long 22, 222	1		1	40		
41	2	23	21		1	X		22, 222, 443			2	30		
27	1	62			1			22, 224, 22mag, 22 auto	1		4	65		
28	3	30	4		1			22, 222			14	1	40	Gov't
31	5	31	5		1			25,35, shotgun, 22 combination shotgun & 22	1		3	5	1	22
31	3	31	5		1			303, 222			3	3	1	50
32	5	33	4		1			422			3 hp	5		66
33	4	34	9		1			422, 44, 303			1	1		40
34	9	35	5		1			422, 22			2	2		45
35	3	35	4		1			303, 22			5 1/2 hp	6		20
35	4	36	5		1			222			20 hp	7	1	100
36	5	36	9		1			22, 25,35			7	1		40
36	9	37	4		1			22, 30,30			7	1		20
37	4	39	5		1			20 ft. *			5 hp	5		2
41	4	41	4		1			20 ft. *			3 hp	6		30
42	5	42	7		1			300, 22, Shotgun			1	1		1 Gov't
43	7	44	7		1			30,30, 22 long, 22 mag			3 hp	7		100
44	7	44	7		1			222, 22			12	1		40
45	7	45	13		1			30,30, 22, 25,35			7	7		65
45	4	45	4		1			22 mag			9	9		10
45	4	45	9		1			22, 25,35			5 hp	7	1	RCMP
45	9	47	3		1			303, 22			1	1		20
46	6	47	6		1			303, 22, 25,35			3 1/2 & 5 hp	1		100
46	3	48	23		1			303, 25,20, 30,30			1	1		1 Gov't
46	6	48	23		1			22, 222			2	2		20
47	3	49	19		1			303, 22			5 hp	11	1	39
48	6	49	19		1			303, 22, 25,35			1	1		60
48	3	50	6		1			303, 222 Son's)			6	6		142
48	6	50	6		1			22, 222			3 hp	7	1	100
49	5	50	6		1			300			3 hp	8		25
50	6	51	13		1			22			1	1		1 Gov't
52	3	52	13		1			16 ft.			6 hp	2		10
52	22	52	13		1			X			1	13	2	60
52	5	52	23		1			222, 22			4	4	5	5
55	5	55	16		4			22, 222			1	5 hp	7	1
								25,20, 22				30		
								222						

Note: * Skiff
X Co-used
n Whaleboat

Age of Head	No. of Dep.	Age of Co-User	No. of Dep.	Relationship of Co-User to Head	Komatik	Skidoo	Canoes	Rifles	Binoculars	Fish Nets	Outboard Motors	Dogs	Seal Nets	Traps	
59	3	17		Son	1	*		222 22, 222	1		7	1	30		
59	3			Son	2	*		22, 222	4	4 hp	12	1	100		
59	6	25		Son	1	16 ft. 20 ft.		303, 30, 06, Shotgun	2	10 hp	3	1 Gov't	100		
59	22			Son	1	20 ft.		22	2	10 hp	9	1	36		
62	3	19		Son	1	20 ft.		22m shotgun, 303	1	3			6		
62	5			Son	2	20 ft.		300, .22 Mag	1	3	2 hp	12	1	40	
64				Uses son's sled & dogs				.22 mag, 222					Uses son's dogs		
72	4	23		Son	1	16 ft.		303, 22	1	5	2 hp	7	6	47	
77	2	47	6	Son	2	*		22, 222, 30, 30, 300	1	5	X	6	1	25	

MICHIGAN BAY

23	3					1		42, 222	1		15		65		
29	3					1		22, 222, 30, 30	1		6		16		
31	5					1		300	1		13		1	16	
32	6					1		222	1		3		60		
37	4					3	16 ft. *	222, 22, 30, 30	1		10		3 Gov't	20	
45	2					2	16 ft.	222, 22 mag	1		9		20		
67	3					1		22, 222	1		10		45		

ANVIL POINT SEAT

37	6					3	1	W	22, 270		1	10 hp	12	2	160	

PUTT POSS-EKAKA-SOCK

Note: * Skiff
 X Co-used
 .. Phaleasant

Age of Head	No. of Dep.	Age of Co-user	No. of Dep.	Relationship of Co-user to head	Komatlik	Skidoo	Canoe	Rifles	Binoculars Scopes	Fish nets	Outboard Motors	Dogs	Seal Nets	Traps
52	9	24 21 18		Son Son Son	1 1 1	16 ft.	2x22s 300 savage 303, 2x22s 30-30, 243	2		5 hp	37		95	

PELLY BAY EQUIPMENT - BY AGE AND FAMILY HEAD, 1968

23	1													
24	3	27	3	Brother	1									
29	3	Note: both brothers share some equipment with their father.			1	1	20 ft. 20 ft. X	22, 222 22, 222 X	1	3	9 1/2 hp Father's Father's	1	6	
29	6				1	1	16 ft.	22, 30-30	1	1	6 hp 10 hp 9 1/2 hp	2	2	
33	6				1	1	16 ft. *	30-30, 22mag, 303			6 hp 6 hp 6	50 co-ops		
34	3				2	1	20 ft.	30-30, 300, 22	1	1	8	10	10	
37	3				3	1	16 ft.	30-30, 22, 22mag	1	1	8	20	20	
43	8				1	1	20 ft.	Shotgun, 22, 30.30, 25.35	1	1	4	120	co-ops	
45	3				2	1	16 ft., 20 ft.	22, 222	1	1	4	20	20	
45	3				2	1	20 ft. W	22, 222	1	2	2	9 co-ops		
45	3				1	1	16 ft., 20 ft.	2x30-30, 22, 25.20	1	2	X	9	9	
48	3				3	1	30-30	30.30	1	1	X	3	3	
53	2				1	1	16 ft., 20 ft.	Shotgun, 3x22, 2x30-30, 222	1	1	6 hp	6 hp	6	
53	2				1	1	20 ft.	22, 222	1	1	4	30	30	
53	5				1	1	22, 222	22, 222, Shotgun, 222, 303	1	1	7	X	X	
53	20				1	1	30-30	3x30-30, 203, 22	1	1	6 hp, 9 1/2 hp	7	7	
53	22				4	1	16 ft., 20ft.	30-30, 2x22	1	1	5 hp, 5 1/2 hp	12	1	
53	25				2	1	30-30	30-30, 2x22	1	1	X	X	3	
57	1				1	1	22, 222	22, 222	1	1	5 1/2 hp	X		
57	30				2	1	16 ft.	30-30, 2x22	1	1	3	6 co-ops		
56	5				4	1	20 ft.	30-30, 2x22	1	1	10	72		
59	4				3	1	16 ft. *	2x22, 25.20, 2x22	1	1	9 1/2 hp	10	1	
60	8				3	1	20 ft.	30-30, 2x22	1	1	4	12 co-ops		
63	5				3	1	20 ft.	22, 30-30	1	2	3	36 co-ops		
66	3				3	1	20 ft.	22, 30-30	1	1	5 1/2 hp	2	2	
66	2				4	1	16 ft.	22, 30-30	1	1	5 1/2 hp	12	12	
73	1				1	1	16 ft.	30-30, 22	1	1	2 plus someone else	plus someone else	3	
						2			2	4	4	Defend-ent		

Note:
 * Skiff
 X Co-User
 W Whaleboat

GJOA HAVEN EQUIPMENT - BY AGE AND FAMILY HEAD, 1969

Age of Head	No. of Dep.	Age of Co-user	No of Dep	Relationship of Co-user to head	Komatik	Skidoo	Canoe	Rifles	Binoculars Scopes	Fish Nets	Outboard Motors	Dos	Seal Nets	Traps
22	1			Father's Father's				222		1				
23	4							Shotgun, 222, 22mag 22, Shotgun		1				
22	2							270, 222, 22, Shotgun		1				
29								-						
30	L							22, pistol						
								22, Shotgun, 2x22						
28				Brother	1			222, 22mag		2				
29	3			Brother	1			303, 30, 30, 22 shotgun, 25, 20		1				
30	4													
31	4													
35	4		72											
			33											
37	5		4											
			23											
39	9			Stepfather	X									
			5											
39	5				X									
			5											
45	5				X									
			3											
39	5				X									
			5											
45	5				X									
			2											
33	5				X									
			20											
52	5				X									
			17											
54	2				X									
			26											
			3											

Note: X Skiffed
' Co-used
W Inleashed

APPENDIX 3

Gjoa Haven, Housing Summary
1968

House No.	HOUSING CHARACTERISTICS					NATURE OF HOUSING						
	No. of families	Adults	Child	Total	Tenancy	House Type	No. of rooms	Size	Sep. Toilet & bath facil.	Age	Cond.	
1	1	3	3	6	RCM	Frame	1	12 x 12	No	1965	Fair	
2	1	3	2	5	W	370A	1	12 x 24	Yes	1965	Good	
3	1	2	3	5	R	Frame	2	18 x 12	Yes	1965	Good	
4	1	2	2	7	R	370A	2	12 x 24	Yes	1966	Good	
5	1	2	1	3	R	Fed School	3	28 x 24	Yes	1963	Good	
6	1	4	2	6	Coop	Frame	4	30 x 20	Yes	1966	Good	
7	1	2	3	5	Coop	Frame	1	13 x 13	No	1965	Bad	
8	1	2	3	5	RCM	Frame	1	14 x 14	No	1963	Bad	
9	1	3	2	5	O	Shack	1	20 x 12	No	1963	Bad	
10	1	2	—	2	W	370A	1	12 x 24	Yes	1965	Good	
11	1	3	3	6	W	370A	2	12 x 24	Yes	1965	Good	
12	2	4	1	5	RCM	Shack	1	12 x 12	No	1964	Bad	
13	1	3	4	7	W	370A	1	12 x 24	Yes	1965	Good	
14	1	2	4	6	O	Shack	1	10 x 10	No	1964	Bad	
15	2	4	5	9	W	370A	2	12 x 24	Yes	1965	Good	
16	1	4	3	7	Ang.	Frame	3	18 x 24	Yes	1964	Good	
17	1	2	2	4	O	Shack	1	8 x 8	No	1963	Bad	
18	1	2	3	5	O	Shack	1	8 x 8	No	1963	Bad	
19	1	3	6	9	R	370A	2	12 x 24	Yes	1963	Good	
20	2	5	3	8	R	370A	2	12 x 24	Yes	1964	Good	
21	1	2	4	6	RCM	Shack	1	12 x 12	No	1963	Bad	
22	1	2	3	5	R	370A	1	12 x 24	Yes	1965	Good	
23	1	2	2	4	O	Shack	1	10 x 8	No	1963	Bad	
24	1	3	2	5	R	370A	1	12 x 24	Yes	1965	Good	
25	2	4	7	11	R (HBC)	Frame	5	36 x 36	Yes	1953	Good	

O	=	Owner occupied house
R	=	Northern Administration Branch Rental House
W	=	Northern Administration Branch Welfare Housing
RCM	=	Roman Catholic Mission Building used as a house – no rental paid
Coop	=	Co-operative Building used as a house – no rental paid
Ang.	=	Anglican Mission Residence used as a house – no rental paid
HBC	=	Hudson's Bay Company – rental paid

Abbreviations used:

APPENDIX 3

Spence Bay, Housing Summary
1968

House No.	HOUSING CHARACTERISTICS				NATURE OF HOUSING									
	No. of families	Adults	Child	Total	Tenancy	House Type	No. of rooms	Size	Sep. Toilet & bath facil.	Age	Cond.			
1	1	2	3	5	0	Shack	1	10 x 10	No	?	Bad			
2	1	2	3	5	0	Shack	1	8 x 8	No	?	Bad			
3	1	2	4	6	0	Shack	1	10 x 10	No	1963	Bad			
4	1	2	3	5	0	Tent frame	1	10 x 10	No	1965	Bad			
5	1	2	2	4	R	370A	1	12 x 24	Yes	1964	Good			
6	2	3	4	7	R	370A	1	12 x 24	Yes	1964	Good			
7	1	4	2	6	R	370A	1	12 x 24	Yes	1964	Good			
8	1	2	3	5	0	370A	1	12 x 24	Yes	1964	Poor			
9	1	2	3	5	0	Shack	1	8 x 8	No	1963	Bad			
10	1	2	4	6	HBC	Frame	2	18 x 12	Yes	1950	Good			
11	1	2	4	6	0	Shack	1	8 x 8	No	1965	Bad			
12	3	6	3	9	R	370A	2	12 x 24	Yes	1964	Good			
13	1	2	3	9	0	Shack	1	8 x 8	No	1963	Bad			
14	1	4	6	10	R	Frame	5	20 x 32	Yes	1964	Good			
15	1	4	1	5	0	Shack	1	10 x 10	No	1962	Bad			
16	1	3	4	7	R	370A	2	12 x 24	Yes	1964	Good			
17	2	2	1	3	W	370A	2	12 x 24	Yes	1964	Good			
18	1	3	2	5	W	370A	2	12 x 24	Yes	1964	Good			
19	2	3	0	3	O	Shack	1	8 x 8	No	1962	Bad			
20	1	1	2	3	R	370A	2	12 x 24	Yes	1964	Good			
21	1	1	1	1	W	370A	1	12 x 24	Yes	1964	Good			
22	1	2	2	4	O	Shack	1	12 x 24	Yes	1962	Good			
23	1	2	2	4	O	Shack	1	8 x 8	No	1962	Bad			
24	2	4	3	7	R	396	5	20 x 32	Yes	1965	Good			
25	1	3	2	5	O	Shack	1	10 x 10	No	1962	Bad			
26	1	4	8	12	R	Frame	5	43 x 24	Yes	1966	Good			

O	=	Owner occupied house
R	=	Northern Administration Branch Rental House
W	=	Northern Administration Branch Welfare Housing
R.C.M.P.	=	House rented from R.C.M.P.
H.B.C.	=	Hudson's Bay Company

Abbreviations used:

APPENDIX 3

Pelly Bay, Housing Summary
1968

HOUSING CHARACTERISTICS

House No.	No. of families	Adults	Child	Total	Tenancy	House Type	No. of rooms	NATURE OF HOUSING		
								Size	Sep. Toilet & bath facil.	Age Cond.
1	1	3	6	9	R	439	4	32 x 20	Yes	1967 Good
2	1	2	4	6	R	436	4	28 x 24	Yes	1967 Good
3	1	4	6	10	R	439	4	32 x 20	Yes	1967 Good
4	2	3	2	5	R	439	4	32 x 20	Yes	1967 Good
5	1	4	4	5	R	439	4	32 x 20	Yes	1967 Good
6	1	3	2	5	R	439	4	32 x 20	Yes	1967 Good
7	1	2	1	3	R	436	4	28 x 24	Yes	1967 Good
8	1	4	4	8	R	439	4	32 x 20	Yes	1967 Good
9	1	2	4	6	R	436	4	28 x 24	Yes	1967 Good
10	1	2	3	5	R	439	4	32 x 20	Yes	1967 Good
11	1	2	2	4	R	436	4	28 x 24	Yes	1967 Good
12	1	2	1	3	R	439	4	32 x 30	Yes	1967 Good
13	1	3	1	4	R	436	4	28 x 24	Yes	1967 Good
14	1	2	2	5	R	436	4	28 x 24	Yes	1967 Good
15	1	2	2	3	R	439	4	32 x 20	Yes	1967 Good
16	1	2	2	2	R	436	4	28 x 24	Yes	1967 Good
17	1	1	2	3	R	439	4	32 x 20	Yes	1967 Good
18	1	2	2	4	R	436	4	28 x 24	Yes	1967 Good
19	1	1	2	2	R	439	4	32 x 20	Yes	1967 Good
20	1	2	2	2	R	436	4	28 x 24	Yes	1967 Good
21	1	2	1	3	W	439	4	32 x 20	Yes	1967 Good
22	2	2	2	2	R	436	4	28 x 24	Yes	1967 Good
23	1	2	2	2	R	424	2	24 x 16	Yes	1967 Fair
24	1	1	1	1	W	424	2	24 x 16	Yes	1966 Fair
25	1	1	1	1	R	436	4	28 x 24	Yes	1967 Good
26	1	1	1	1	R	439	4	32 x 20	Yes	1967 Good

27	1	3	2	2	5	W	436	4	28 x 24	Yes	1967	Good
28	1	2	2	4	R	R	439	4	32 x 20	Yes	1967	Good
29	1	2	5	7	R	R	436	4	28 x 24	Yes	1967	Good
30	1	1	4	7	R	R	439	4	32 x 20	Yes	1967	Good
31	1	2	2	4	R	R	436	4	28 x 24	Yes	1967	Good
32	1	2	1	3	R	R	439	4	32 x 20	Yes	1967	Good
33	1	4	1	5	W	W	436	4	28 x 24	Yes	1967	Good
34	1	1	1	2	W	W	424	2	24 x 16	Yes	1966	Fair

Abbreviations used:

O = Owner occupied house

Northern Administration Branch Rental House
Northern Administration Branch Welfare Housing

R =
W =

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